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ORIGINAL ARTICLES.

THE EMPLOYMENT OF CENTRIFUGAL FORCE AS AN AID TO THE EXAMINATION OF SPUTUM.

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To facilitate the examination of sputum for tubercle bacilli, and to render more conclusive such examinations when but few bacilli exist in a given specimen of sputum, as well as to offer a substitute for the complicated methods now in vogue for the detection of fibers of elastic lung-tissue, are the objects of the present paper. When sputum contains tubercle bacilli in but scanty numbers it frequently happens that repeated examinations are necessary before their presence can be satisfactorily demonstrated; and even then their existence at times fails of detection, as will presently be shown, when by the aid of the centrifuge that they exist in such sputum can be readily made clear.

So also the application of centrifugal force, in the manner about to be described, to the detection of elastic fibers will be found a great improvement over the present methods. For this purpose at present the plan most generally adopted is that advocated by Fenwick, which consists in boiling the sputum in a dilute solution of caustic potash, then allowing it to settle for twenty-four hours, and examining the sediment for elastic fibers under the microscope. To those who are in the habit of employing this method it is not necessary to call attention either to its complications or to the uncertainty of its results, both of which render its employment practically useless in the ordinary routine of clinical work. Nor is the simpler method advocated by von Jaksch, of adding some potash solution directly to the sputum as it is placed upon the slide, with the object of dissolving the pus and allowing the elastic fibers to be seen, to be any more strongly recommended, as it is open to the chief objection that characterizes Fenwick's method, viz: its uncertainty, and the number of examinations usually necessary before, if at all, the elastic fibers can be found.

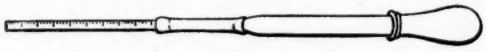
The observations about to be described were made from sputa taken from patients presenting themselves at the out-patient medical department of the Jefferson Medical College Hospital; and because in the present paper it is desired to describe the effect of centrifugation only as it may apply to the tubercle bacillus and elastic fibers of lung tissue, none other than tuberculous sputum is included. This is done, too, notwithstanding that sputa belonging to other diseases of the lungs have been similarly treated, as, for example, the sputum from cases of bronchial asthma, in which we have found that Charcot-Leyden crystals and the spirals of Curschmann can also be very readily demonstrated.

The mode of procedure is as follows: The instrument utilized to produce the required centrifugal force is a machine made by F. F. Metzger, of Philadelphia, under the direction of Judson Daland, as a modification of the hematokrit of Blitz-Hedin, with the difference that the caliber of the glass tube in which the precipitation is to take place is two-and-one-half millimeters in diameter, instead of one-half millimeter, as is the case with the hematokrit. In both instruments the length of the tube is the same, about fifty millimeters. Inasmuch as the greater the number of revolutions of the precipitating tube we are able to produce in a given time so much less time will be required in the manipulations, thereby simplifying the procedure, the machine made by Metzger is advocated, as no instrument yet brought to the attention of the writers has been found to approach it in speed. Though as yet untried, the force derived from a small electric motor might be utilized with advantage for the purpose of furnishing the necessary power for the operation of the centrifuge.

The preparation of the sputum before placing it in the precipitating tube is extremely simple. A small quantity is placed in a porcelain dish, and actively stirred for a few moments with a glass rod. Under this treatment the sputum soon becomes, without the addition of any diluting fluid, a thin liquid, free from lumps, and apparently of homogeneous character. The precipitating tubes are then filled, the sputum being drawn into them by means of rubber tubing having attached to one end a small rubber bulb to produce the necessary suction. We have used for this purpose an ordinary medicine-dropper with its attached bulb, inserting the nozzle end of the dropper into the end of the

rubber tubing, the other end of which is applied over the end of the precipitating tube. This method has been adopted to render unnecessary suction by the mouth which, were there no other reasons why it should not be resorted to, might not be free from danger in the case of tuberculous sputum. For the purpose of elucidation a drawing of this simple apparatus is given, and so easy of application is this method that its use has been resorted to for the drawing up of the blood into the precipitating tube of the hematokrit, as it has been found that the column of blood is thus more susceptible of control than it is with mouth suction.

FIG. 1.



Medicine dropper attached by rubber tubing to precipitating-tube.

The two precipitating tubes filled with sputum thus prepared are now placed in the centrifuge, and rapidly revolved for at least two minutes. With a speed of ten thousand revolutions per minute, which is easily attained by the improved apparatus made by Metzger, two minutes is quite time enough to produce complete precipitation of the more solid portions of the sputum, along with which, as shall presently be shown, go the objects of our search.

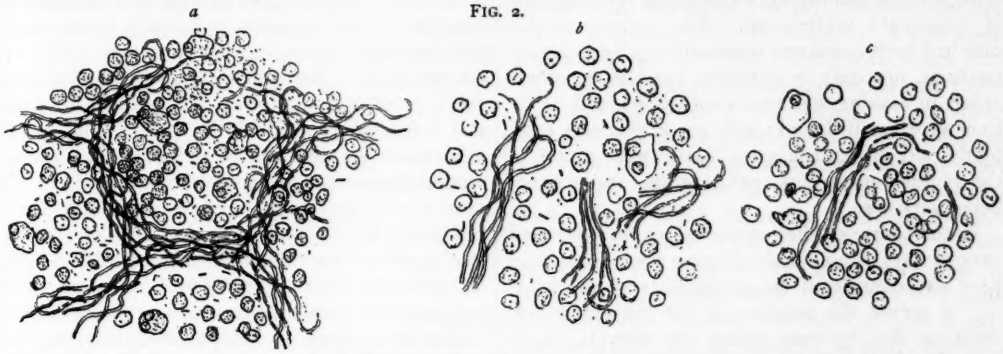
Precipitation thus having been accomplished, to the unaided eye the sputum will be found to have separated into two layers; that at the distal or peripheral end of the tube being yellowish or greenish in color; that at the proximal or central end appearing as a slightly turbid, almost transparent watery fluid, which by the microscope is found to contain no cellular elements whatsoever. In the peripheral end of the tube, however, the microscope reveals, closely packed together, but their integrity not in the least impaired, the various forms of epithelial cells and pus cells contained in the sputum. The more purulent is the character of the sputum, the greater the amount of desquamation of epithelium, of course the greater will be the depth in the precipitating tube of the purely cellular portion of the sputum—an observation possibly not without its value.

Undoubtedly the most important evidence that a destructive process is taking place in the pulmonary structure is to be found in the discovery of elastic fibers in the sputum. With obscure symptoms and signs pointing to a pulmonary tuberculosis, their significance is even greater than the presence of tubercle bacilli, unless in large numbers, as bacilli may be found in sputum when the lungs are in no wise diseased. The finding of elastic fibers is positively indicative of destruction, and the other destructive diseases of the lungs, such as bronchiectasis and pulmonary abscess, are not by their symptomatology likely to be confounded with tuberculosis. Pulmonary gangrene is not here classed with diseases of the lungs characterized by destruction of the lung-tissue, and to be compared with tuberculosis, because, as was first pointed out by Traube, the sputum expectorated in cases of pulmonary gangrene rarely contains elastic fibers, for the reason that they are probably completely destroyed within the gangrenous area. Therefore, the presence of elastic fibers in the sputum, with signs and symptoms pointing to pulmonary tuberculosis, even though these be obscure, and even though the presence of the tubercle bacillus may not be demonstrated, would clearly establish the diagnosis of pulmonary tuberculosis. Hence, that which will supplant the complicated and uncertain method of Fenwick, or the somewhat less complicated but none the less uncertain method of Von Jaksch for the detection of elastic fibers, cannot fail to be of great practical value when the importance of the subject is taken into consideration.

From the large number of observations we have made, now amounting to many hundreds, it has been definitely demonstrated that elastic fibers are precipitated by centrifugal force in the largest numbers to the very extremity of the peripheral end of the precipitating tube. The sputum occupying this portion of the tube, when rich in cellular elements, is found to be quite thick in consistence, and is usually extruded as a mold of the interior of the tube. Without any dilution, or any means for the solution of the pus cells, a small portion of this sputum taken from the periphery of one of the tubes—the contents of the other tube being reserved for the examination for tubercle bacilli—is spread somewhat thinly upon a slide, the cover-glass being pressed down to effect its equable distribution. Examined in this way, if the sputum contain any tissue its presence cannot fail of discovery. Examining the contents of the precipitating tube throughout its entire extent for elastic fibers, they are found to rapidly diminish in numbers as we pass from the periphery; and this is found to be the case even when the sputum contains lung-tissue in abundance, as was clearly demonstrated in one case especially, in which in the first slide were discovered ten separate collections or bundles of fibers, while in the second slide but three were found, and in the third but one, none being found beyond the third slide. The bundles of fibers were much larger in the first slide. In the thin, watery portion of the sputum, or that which remains after the precipitation of the cellular and other solid elements, elastic fibers are absent altogether. Elastic fibers examined by this method do not differ in appearance from those found after the methods usually practised for

their detection, and the accompanying drawings of collective fields of sputum taken in succession, beginning at the peripheral end of the precipitating tube and proceeding toward the central end, present good illusrations both of the appearance of the cast-off lung-tissue and its relative frequency in the slides, as the examinations take place away from the periphery of the precipitating tube.

FIG. 2.

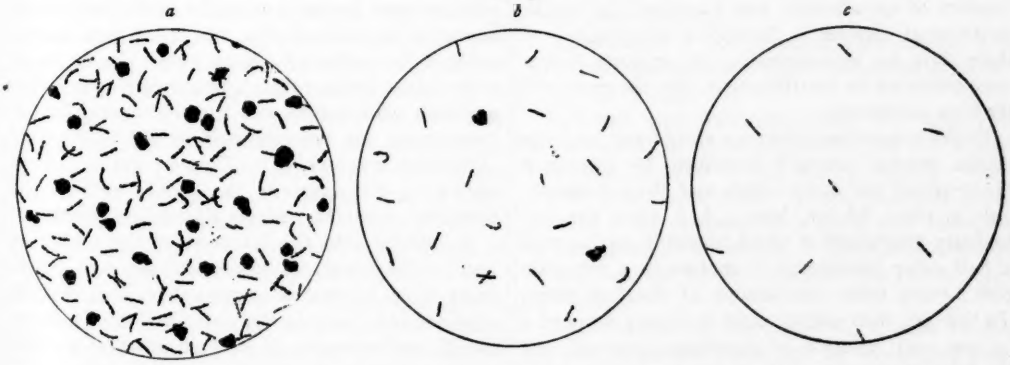


Elastic fibres. D objective, ZEISS. *a*. Slide prepared from extreme periphery of precipitating tube. *b*. Collective field from a slide taken 5 mm. from peripheral end of tube. *c*. Collective field from a slide taken 1 cm. from peripheral end of tube.

It is the experience of everyone accustomed to examine sputum for the tubercle bacillus that in those cases in which the number of bacilli is very small the result of the examination is often disappointing, and a number of such examinations have to be made before the presence of the bacilli can be demonstrated. Indeed, cases are not infrequently met with in which bacilli are not found in the sputum even after repeated examinations, and yet such cases will have presented well-marked evidences of pulmonary tuberculosis.

By centrifugal force, together with the pus cells and the various forms of epithelium, the tubercle bacilli are carried along. Thus it is that they are found in greatest abundance at the peripheral end of the precipitating tube. Centrifugal force does not separate them and assign them a place of their own, but they rather share the fate of the cellular elements of the sputum, which therefore carry the bacilli along with them. Hence it is, that with the bacilli as with elastic fibers, as we pass from the peripheral toward the central end of the precipitating tube they are found to rapidly diminish in numbers, until when the watery portion of the sputum is reached their presence fails of demonstration. That this is the case and the extent to which it is so, the appended drawings of slides prepared and stained from different portions of the tube will clearly show.

FIG. 3.



Tubercle bacilli. Homogen. immers. $\frac{1}{12}$, ZEISS. *a*. Slide prepared from extreme periphery of precipitating tube. *b*. Slide taken 5 mm. from peripheral end of tube. *c*. Slide taken 1 cm. from peripheral end of tube.

The value of centrifugal force as an adjunct to the examination of sputum for tubercle bacilli when they exist in only few numbers can scarcely be overestimated. Again and again have our observations demonstrated to us the facility whereby in such cases the presence of bacilli can be discovered by the aid of centrifugation, and in cases, too, in

which at the same time they were found only after much trouble and repeated examinations by the ordinary methods. This was especially noticed in a case in the wards of the Jefferson Medical College Hospital, which presented well-marked signs of advanced pulmonary tuberculosis, among them being the physical signs of a large cavity below the left apex anteriorly. In August, 1894, this case died, and the autopsy fully confirmed the diagnosis of pulmonary tuberculosis. The sputum of this case had been examined repeatedly by the ordinary methods, not only by ourselves but also by others expert in making sputum examinations, and at no time were bacilli found; and yet in this very case, by the aid of centrifugation bacilli were found in the sputum at the first examination, the number being very few.

In the course of these observations we have tried various ways of previously diluting the sputum, and have also considered the advisability of endeavoring to secure the solution of the pus corpuscles, thinking that by these means the tubercle bacilli and the elastic fibers would be more closely collected together.

We also subjected sputum to a series of examinations according to the method advised by Biedert, which, as described by Von Jaksch, consists of the following procedures: "Ten to twenty cubic centimeters of the sputum are boiled in a watch-glass with a little dilute caustic soda; water is added, and the mixture again boiled until it is thinly fluid. It is then allowed to stand in a conical glass for two or three days, after which the sediment is added to a small quantity of egg-albumin, and examined for bacilli in the usual manner." Instead of allowing two or three days for sedimentation, the mixture was at once subjected to centrifugation, but the result was far from satisfactory.

In this connection reference should also be made to the method recently described by Ilkewitsch (*Centralblatt für Bakteriologie und Parasitenkunde*, Feb. 5, 1894, Bd. xv, Nos. 5, 6, p. 162), the preliminary procedures of which consist in mixing with a half cubic centimeter of sputum in a porcelain dish twenty cubic centimeters of distilled water. To this are then added eight to twenty drops of a 30 per cent. solution of potassium hydroxid, and the mixture warmed until vaporization occurs, until which time it is constantly stirred. Under the influence of the heat and the potassium hydroxid, complete solution of the sputum is supposed to take place, at which time a small amount of casein is added to the mixture and dissolved. The fluid is then poured into a test-tube and acetic acid added, drop by drop, until the first sign of coagulation of the albumin is observed. The liquid is then placed in the cylinder of the centrifuge and rotated until separation of its elements takes place. When the separation has occurred a small ball suspended by a thread is lowered into the cylinder upon the collected sediment, and the superimposed fluid allowed to flow out. The sediment is then treated according to the special method which it is the object of the paper of Ilkewitsch to set forth.

In the course of our work upon the subject we found that dilution of the sputum as a preliminary measure to centrifugation is not only unnecessary, but interferes materially with the success of the examination, as it lessens the actual amount of sputum precipitated and diminishes the number of bacilli and elastic fibers available for observation, as well as increases the difficulty of staining. It is further rendered unnecessary because the sputum, by the process of trituration as above described, is rendered sufficiently fluid for proper manipulation; indeed, such sputum, even though abundantly rich in cellular elements, after centrifugation is found to be composed of more than one-half water.

The same objections apply to the various methods resorted to for causing a solution of the sputum, and it seems to us that such methods as those advised by Biedert and Ilkewitsch needlessly complicate what should be only a very simple process. The object of both of these methods is especially directed to the collecting together of bacilli, from sputum containing them in but scanty numbers, within a limited space. For accomplishing this purpose that method which is the simplest in its details, and which requires but a very few moments for its completion, provided that its object is effected with the same precision as by the more complicated means, is the method that will prove most practicable in the routine of clinical work. Furthermore, other things being equal, why should methods that are both complicated and time-consuming be followed when one presents itself in which both these objections are lacking? That we are not overestimating the value of the simple method just described, we think we have abundantly proved.

In looking into the literature of the subject we find but few references to the adaptation of centrifugal force to sputum examination, and the few obtained refer only to the precipitation of tubercle bacilli, and nowhere do we find recorded any observations upon the effect of centrifugation upon elastic fibers. We therefore feel that the observations made in the present paper, so far as they refer to this part of the subject at least, are original.

In conclusion we would say that, as a result of the above investigations, in the centrifugal machine we possess a very important adjunct to the present methods in use for the examination of sputum. Nor in its adoption will clinical medicine be burdened with a new instrument, as the centrifuge has

so many well-demonstrated uses that in any clinical laboratory its presence is indispensable. In the form of the hematokrit its value is now acknowledged, and as a means for procuring the sedimentation of urine it possesses sufficient importance to warrant its possession were that the sole claim for its adoption; and, finally, that it is of practical value in the examination of sputum has been conclusively proven in the clinical laboratory of the out-patient medical department of the Jefferson Hospital, where for the past six months the routine examinations of sputum have been conducted with its aid.

PAINFUL GASTRIC NEUROSES: THEIR DIAGNOSIS AND TREATMENT.

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(Continued from page 346.)

Diagnosis.—In order to arrive at a diagnosis of a painful gastric neurosis it is necessary to exclude gastric and duodenal ulcer, carcinoma, and other organic disorders of the stomach, biliary colic, chronic pancreatitis, acute pancreatic hemorrhage, rheumatism of the abdominal walls, referred pain from renal colic or appendicitis, and intercostal neuralgia.

It is by no means always an easy task to differentiate between some of these affections and nervous gastralgia. I have already spoken of the difficulty that may attend the distinction between gastric pain in chlorosis accompanied and unaccompanied by ulcer. If HCl is present in excess, with vomiting of blood, and sharp boring pain be localized to one small spot in the epigastrium, a little to the right of the median line, and shooting through to the back, the diagnosis of ulcer is justified. On the other hand ulcer may exist without any of these stigmata, so that all manner of obstacles may be thrown in the way of a clear diagnosis. Duodenal ulcer is more frequent in men between thirty and forty years of age, and is generally accompanied by vomiting of dark, changed blood and profuse bloody stools. HCl in excess is the rule in this affection, as it is in gastric ulcer. Gastric carcinoma may be present without coffee-ground vomitus, and without distinguishable tumor, but if these are present in a person of advanced years, and if there is a persistent absence of free HCl, with a steady failure of strength and loss of weight, a diagnosis of carcinoma may be made. Yet in two cases of severe gastralgia in women, first seen three years ago, the diagnosis was for many months in grave doubt, owing to the fact that both were well on in years; both gave a history of pain, vomiting and loss of flesh, and in both there was a continued absence of HCl, with retarded motion. After some months of treatment HCl appeared in one case, and the gastric chemistry thereafter remained fairly good. In the other case HCl was found but once. Both patients were relieved by the intra-gastric application of the galvanic current, and are better to-day than they were three years ago.

Biliary colic is distinguished from neuro-gastralgia by a history of gall-stones, pale stools, perhaps icterus, and bile-stained urine. Nevertheless perplexity may arise in this connection. About a year and a half ago a healthy-looking man, about forty years of age, presented himself, suffering with severe pain that he referred to his stomach. Upon direct examination I found good digestion, with a copious supply of HCl. Lavage and gastric sedatives gave him relief. He went to California, and was well while there. Upon his return to Buffalo he again had a severe attack of pain referred to the right epigastrium. The pain was tearing, gnawing and intolerable. The intra-gastric conditions were again found normal. The pain continued in spite of ordinary remedies, and he was sent to bed. Morphin alone gave relief, and in a few days moderate jaundice developed. Recovery took place some days later. No biliary calculi were found in the stools, nor were the latter noticeably pale. A similar case in the person of a healthy man of about the same age came under my observation last autumn.

Chronic interstitial pancreatitis is accompanied by emaciation, vomiting, glycosuria, fatty stools, epigastric pain, and occasionally salivation and lipuria. Acute pancreatic hemorrhage is usually accompanied by symptoms of profound shock, and death soon follows.

Rheumatism of the abdominal walls may be noted by tenderness upon movement, somewhat as motion is painful in lumbago.

Referred pain from renal colic will usually be attended with manifest nephralgia and the urinary condition incident to that disease, together with a history of nephritic colic. Appendicitis will be discovered if the temperature is taken and the region of the appendix examined. Intercostal neuralgia will be detected by the presence of the tender points of Valleix.

The treatment of neuro-gastralgias aims to stop the pain in the first place, and in the second place to remove the causative elements in the case. When it is possible to apply lavage with water at a temperature of about 110° F. during an attack of severe gastralgia very great relief often follows, and sometimes the pain ceases at once. The direct application of the galvanic current to the walls of the stomach acts in some cases like a charm in dispelling the pain. The positive pole should be used inside of the stomach and the strength of the current should be from four to twenty milliampères. If the gastric

contents are of a high total acidity large doses of sodium bicarbonate or light magnesium carbonate frequently afford relief. As a local sedative in gastric hyperesthesia, a combination of cerium oxalate, or bismuth with magnesium carbonate, is usually very efficacious as a remedial agent. Occasionally one-eighth grain of cocain in tablet or in solution allays even severe pain. Chloroform or chloroform-water is also useful during an attack. A dessert-spoonful of smooth whiskey or brandy sometimes gives relief. Hoffman's anodyne has not proved satisfactory in my experience. Dilute hydrocyanic acid in five-drop doses is very effective in some cases. Cannabis indica, combined with belladonna, aconite, or hyoscyamus, lessens the pain in a few cases. Antipyrin, phenacetin, and acetanilid have not proved valuable remedies in gastralgia. Occasionally a twenty-grain dose of quinin sulphate will cut short an attack. Finally, morphin hypodermatically, may be necessary in the event of failure with other measures.

Other procedures are often helpful in the treatment of an attack of gastralgia. Sponging the spine with water as hot as the patient can bear appears to give some comfort. The old-time hot fomentations upon the epigastrium, or a mustard plaster, assists in quieting the patient and the pain. The application of hot and cold water thrown alternately in a fine jet upon a small spot on the epigastrium is useful. A hot enema sometimes gives relief from gastralgia, as it does from enteralgia.

The treatment of the condition underlying painful gastric neuroses involves the removal of the cause as far as is possible in a given case, while local treatment of the stomach is frequently to be carried out together with careful attention to the general nervous state of the patient.

If the case be one of neurasthenia all possible sources of reflex disturbance ought to be eliminated if practicable. If the patient be a so-called lithemic, or if the kidneys are sluggish, active elimination by way of the bowels and skin should be effected. The diet should in each case be regulated according to the gastric chemistry. Constipation should be effectually overcome. Massage, exercise, general faradization, and the various uses of cold water for its tonic effect, are all beneficial in many cases in improving the blood and the nervous tone.

Among the drugs that may be used with advantage for the purpose of improving the innervation of the stomach as well as improving the general condition of the patient, nux vomica or strychnin is of great value. Strychnin is a good blood-maker by stimulating the functional activity of the digestive organs and the hematopoietic apparatus. In the milder forms of gastric pain and discomfort after eating, good-sized doses of nux vomica or strychnin sulphate very often suffice to do away with the pain. Phosphorus and arsenic are often well tolerated by these patients, and are very useful. In a few cases of moderately severe gastralgia five-grain doses of quinin sulphate night and morning have been successful. Iron should be used if indicated, as the mere existence of neuro-gastralgia is no contra-indication to its use. Asafetida in emulston is a drug of signal service in hysterical cases, especially when nervous belching is a marked symptom. In some mild cases a mercurial purgative followed by Carlsbad salts in the morning, and thereafter, for a while, by the daily exhibition of Carlsbad, will be sufficient to break the morbid cycle, and, in otherwise healthy individuals, restore gastric comfort.

An ocean voyage, mountain scenery, a stay at the seaside, may effect a cure in the absence of all medication or other forms of treatment.

OBSTETRIC INSTRUCTION.

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IT would be strange indeed if the advances made in the instruction of medical students in other branches should not apply also to the study of obstetrics. The saving of human life and suffering which the knowledge of proper methods of diagnosis, familiarity with antisepsis, and education in obstetric operations have brought about in the hands of the few and skilled, must be reflected in the teaching given to students. Where a monarchical government is not at hand to dignify science by official recognition, and to control its wards, the problem of dealing with indigent patients in hospitals and in their homes is much more complex than in the government hospitals of the Continent. It is evident that in American cities, while a certain proportion of obstetric cases are confined in hospitals, a considerable number remain at home, and the teacher of obstetrics must be prepared, not only to exemplify in his wards an advanced stage of scientific work, but to make practical application of the same amid the less favorable surroundings of the lodging or tenement.

In considering the practical application of this question, we must emphasize first the fact that labor is a physiologic and spontaneous process *only* in physiologic individuals. The rarity with which one meets with perfectly healthy individuals proves that a large proportion of labors are neither physiologic nor spontaneous, but require intelligent treatment.

It may next be said that a medical student is not legally competent to attend such a case. No person without a license from the municipality in which he or she lives should be allowed to attend a con-

finement, and the infringement of this regulation, which is a law in some communities, should subject the offender to prosecution. Under these conditions the indiscriminate assignment of confinement cases to medical students during their tutelage is an offence against medical science and municipal law. The student, however, should visit cases of confinement in the homes of patients and in hospitals under intelligent supervision. He may with propriety and benefit under such instruction act as nurse, although it is a question whether he will not learn more from observing the work of a competent district nurse who visits the patient, than from attempting to care for her after his own fashion.

These premises, it seems to me, call for the following organization in the corps of a medical staff for obstetric teaching: first, the head of the department, a man able and willing to perform, in the best modern methods, any obstetric operation at any time and place. This man should be physically capable of the exertion which pelvic and abdominal surgery requires in difficult operations. He should be possessed of the requisite instruments and apparatus to operate at any time in the hospital or in private houses. He should have the energy and devotion to his work which will lead him to undertake operative treatment when necessary, and the honesty of purpose which will lead him to promptly accept a responsibility that rightfully belongs to him. His field of operation should include Cesarean section, symphysiotomy, the high application of the forceps, version; if the case be complicated, embryotomy, the treatment of inversion of the uterus, eclampsia, and dangerous hemorrhage. He should personally decide in cases of puerperal sepsis whether or no operative interference is indicated of any nature whatever. He should instruct medical students by lectures and clinics, and the entire material of the service, both in and out-door, should be absolutely at his disposal.

Next in rank to him may come his assistant and demonstrator. This man should be versed in palpation and auscultation, in the immediate operation for the laceration of the perineum, in methods of treating hemorrhage and eclampsia, and in all obstetric operations by which faulty presentations are corrected. He should be a graduate of several years' experience, and a man of vigor and energy and sufficient devotion to his work to enable him to willingly undertake a considerable amount of arduous physical exertion.

In obstetric hospitals it is often best to add to this service the third graduate physician, namely, the resident physician. He may be appointed by competitive examination immediately after graduation. His province is to attend regularly the wards of a lying-in hospital and patients confined at their homes. He is expected to deliver normal cases, to assist at abnormal cases, and to learn by every opportunity presented. In accordance with his intelligence he will be taught the use of the forceps, obstetric manipulations during labor, the technique of intra-uterine douching and curetting, and the management of the healthy infant. He should report immediately to the demonstrator any abnormality occurring in his practice, and should be immediately under the supervision of the demonstrator.

The undergraduate medical student should be allowed to observe, but not to interfere. He should be present at labors normal and abnormal. When the labor is conducted by the resident physician, the demonstrator points out the salient features of the case, not only in the management by the resident, but in the work of the nurses. When the resident attends cases in the houses of patients he may be accompanied by several students, who shall witness the labor and assist him during its course.

Under the supervision of the resident or demonstrator, the student should be taught antisepsis, and allowed to examine patients when suitable for diagnosis. The student should be taught palpation and auscultation, the signs of pregnancy, the examination of urine, and obstetric antisepsis. He is, however, not qualified to attend or prescribe for an obstetric case in any manner whatever, and should be informed that he is liable to prosecution if he does so. The medical student should attend lectures upon obstetrics, didactic and clinical; should be drilled in palpation and auscultation, and should be thoroughly taught the mechanism of labor by instruction upon the manikin. He should also be instructed in the contour of abnormal pelves, and in pelvimetry.

The instruction of obstetric nurses should first include graduation in a good hospital, perhaps without an obstetric ward. At least three months' service should then be procured in an obstetric hospital, where, in addition to the usual course, the nurse should be instructed in the examination of urine, chemically but not microscopically, and in the administration of ether and chloroform. If she displays suitable intelligence she can be thus taught to become a most efficient aid to a physician in private practice.

Whenever possible, visiting nurses should be employed to attend cases in the houses of patients, and their visits should be so timed that the resident and students may be present at the visit, observing her methods of work.

In the complications of labor, the resident should promptly summon the demonstrator and such students as may be needed for assistance. If an operation be demanded, especially an abdominal

section, visiting nurses should be added to the number to secure proper antisepsis. If the patient can be taken promptly to an obstetric hospital in an ambulance, so much the better. If not, visiting nurses will supply sufficient clean linen to secure asepsis. The chief of the department of clinical obstetrics should bring with him a suitable operating table and portable sterilizer, and the instruments, ligatures, and dressings requisite for any operation. The case should then be dealt with in a complete and thorough manner, the medical students acting as assistants, and continuing in their attendance upon the case after the operation. In the event of the death of the patient, the same students should be present at an autopsy, if obtainable, and also be required to take portions of specimens to the pathologic department of the college, and there to personally examine them under the supervision of the pathologic staff. A medical student should be given distinctly to understand that attendance upon lectures is the most rudimentary step in medical education. The resident physician should understand that by virtue of his competitive examination he has secured opportunities for study not obtainable by others.

In selecting demonstrators, professors of obstetrics would do well to secure such as have a working knowledge of the modern languages. In this manner a professor and his demonstrator may together study constantly current literature, and furnish from time to time papers and clinical reports of value.

ORIGINAL LECTURE.

NERVE-SUTURING—NEURORRHAPHY—NERVE-GRAFTING.[1]

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NERVE-SUTURING.

THE operation of nerve-suturing may be performed primarily or secondarily. Primary suture is performed immediately after or within a few days of the division of the nerve. Secondary suture is done at any time thereafter, even years later—the hope of success diminishing with the length of time, the loss of nerve-substance, etc. These operations have now been sufficiently numerous to show that the fear of tetanus is ungrounded, no deaths being reported from this cause. Suture of a divided nerve would certainly result in tetanus if division of a nerve, inflammatory conditions, and the presence of foreign bodies were causes of tetanus. Practical experience shows that with cleanliness of person and of instruments the operation is a safe one.

[1] One of the Mütter Course of Lectures delivered before the College of Physicians of Philadelphia.

It is best performed after wounds by squaring the divided ends with a very sharp knife, not with scissors, and suturing in such a manner as to prevent any twisting or infolding of filaments. Catgut, very fine, chromicized or made thoroughly aseptic in boiling alcohol, should be employed. Fine sterilized silk is equally good. A round needle is better than a cutting one. The suture should pass directly through the body of the nerve and include both sheath and fibers. A second suture at right angles to the first is often desirable.

Secondary suturing is performed by freeing the imprisoned nerve from all its surrounding cicatricial connective tissue, stretching it freely, and removing a small section, so as to give good opposing surfaces.

It is not well to remove successive sections from the end of a nerve to secure good nerve-filaments and tissue, as the gap may be made very wide before good tissue is reached. It is better, after getting rid of the dense central connective tissue, to draw moderately good ends together and unite them. A nerve will stretch very considerably if it is thoroughly cleared for some distance from the surrounding tissues.

FIG. 1.

FIG. 2.

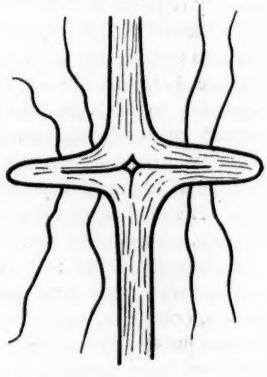

FIG. 3.

The most serious obstacle to successful nerve-suturing is the loss of nerve-substance, occasioned either by a wound or by the extirpation of a neuroma or other tumor. Frequently an inch can be gained by clearing the nerve for a considerable distance, but when this fails the gap must be bridged either by flaps cut from the nerve by longitudinal splitting and turned over from either end or by the device of Bruns (see Figs. 1, 2, and 3), or by grafting.

Gleiss[1] reports thirteen instances of nerve-suturing in eleven patients in Bruns' clinic at Tübingen from 1882 to 1891. Four were primary operations, seven secondary. Union was secured in all but one case. The median nerve was sutured five times, the ulnar three, the radial four, and the peroneal once. The most rigid asepsis was adopted.

Bruns does not freshen the nerve-ends in primary wounds, but in secondary ones the ends are cut off and the intermediate cicatricial tissue is removed. He gives two new plans for approximation in old cases in which there is union by a connective-tissue bridge. While these are ingenious they do not seem to offer a good end-to-end approximation; not so good as is secured by cutting off the ends and simply suturing them, Figs. 1, 2, 3.

In a case of tearing of a radial nerve complicated with fracture there was no restoration of function at the end of five months. The nerve was thoroughly liberated from compression and from the connective tissue, and was enveloped in a graft of skin, after the method of Thiersch, to prevent restrangulation. Without having given this latter method a practical trial, it strikes me that the squamous epithelial skin-cells would more probably produce compression than would the connective-tissue cells.

The limb should be fixed after the operation, to prevent motion and tension. Massage and electricity should be subsequently used.

Etzold reports six cases of nerve-injury in the region of the axilla in which restoration of function did not occur, even though the nerves were sutured. He attributes this result to the fact that in high injuries like these it is difficult to restore the nerves. This was, perhaps, not so much due to the height of the injury as to the complications that existed in the axillæ, as the brachial veins had to be ligated; and this, in addition to the injury of the surrounding soft parts, must have interfered with nutrition. Etzold found, as have other observers, that cerebral impulses are conducted along the nerve at an earlier period than those arising from electric impulses. Motion was established in one case fourteen months after suturing, yet there was no electric response.

That sensation seems to require a lower degree of conducting-power in the nerve than does motion is demonstrated in another instance in which return of sensibility was much more rapid than that of motion.

Wolberg[2] has made a number of experiments to decide whether a nerve can heal without degeneration of the peripheral segment. In all of his cases degeneration did take place, and in all of my experiments undoubted degeneration has occurred. In Bruns' four cases of primary suture there was immediate restoration of function.[3]

NERVE-GRAFTING AND NEUROPLASTY.

The suturing of one end of a widely separated nerve-trunk to the freshened surface of a neighboring nerve or muscle is sometimes advantageous. Splitting the nerve and turning down the fragments endangers the vitality of the nerve. Fig. 4.[4] I have practised this method in cases in which the ends could not be brought together by other means, but the results have been only partially satisfactory. Splitting a nerve interferes very seriously with its transmitting-power and subjects it to the risk of inflammation. Microscopic examination, however, in a number of my experiments, shows that even though the injured flap degenerates, it forms a skeleton or basis for regeneration of nerve-filaments.[1] The split halves can, however, sometimes be brought into close end-to-end union; but if torn loose from its attachments the flap becomes a transplanted nerve. If its sources of supply are gone, this procedure possesses but slight advantage over the transplantation of an entirely new piece of nerve from an individual or an animal. The best possible insertion for a fresh graft is a nerve taken from an amputated human limb and immediately introduced into the gap. (Fig. 5.)

FIG. 4.

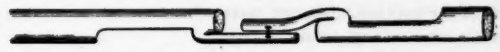

FIG. 5.

To freshen a neighboring trunk and apply the cut end to its side may be helpful, but this is attended with the risk arising from irritation of the trunk, which may result in pain and other trophic symptoms.

Numerous operations for transplantation of nerves have been described. One of these is by Tillemanns,[2] in which a section four and one-half centimeters long, from a nerve of a rabbit, was inserted in the median and ulnar nerves. Sensation returned in four weeks and motion in nine. Another case is Kaufmann's,[3] in which after an injury to the musculo-spiral nerve a gap of four centimeters was filled with the transplanted sciatic of a dog. The result was doubtful three months later.

Robson[4] inserted two-and-a-quarter inches of a human posterior tibial nerve (secured from a fresh amputation) into a gap in the median, forty-eight hours after an injury. Four months later sensation was almost entirely restored, and although trophic changes were present, the case was very hopeful.

Hoffmann inserted the sciatic of a dog into the radial without benefit; and White, replacing the musculo-spiral by the sciatic of a dog, met with a like result. Albert grafted a section of human nerve into the median and the ulnar in separate cases, but without benefit. Gunn attached the ulnar to the uninjured median, and one month later reported the finger as strong.

Ward inserted two and a half inches of median nerve, just amputated, into a median injured four months before. Seventeen months later there was slight sensation of touch and a fair amount of power, an improvement upon the previous condition.

In another case two inches of a sciatic nerve from a rabbit were placed between the split ends of an ulnar. Sensation returned upon the eighteenth and motion upon the twenty-fifth day. The use of the hand, with marked grasping-power, completely returned.

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[1] Beit. zur klin. Chirurgie, Band x, Heft 2, 1893, and Annals of Surgery, August, 1893.

[2] Deutsch Zeitsch. fur Chirurgie, Band xix.

[3] See Gleiss' tables, Annals of Surgery, August, 1893, p. 233.

[4] In Fig. 4, the flaps should have been sutured end to end, instead of overlapping.

[1] International Medical Magazine, April, 1894.

[2] Berliner klinische Wochenschrift, June, 1883.

[3] Revue de Sci. Méd., 1884, vol. xxiv, p. 305.

[4] Clinical Society, London, 1889.

It will be noticed that sensation antedates motion, and in all these cases it was proved that atrophy of the peripheral end certainly was marked.

Atkinson sutured the median nerve and inserted the sciatic of a rabbit between the extremities of the ulnar. Sensation returned before motion.

Harrison[1] reports eight cases of nerve-grafting. In one case he inserted two-and-one-quarter inches of the sciatic nerve of a freshly killed kitten into a median nerve, two inches of which had been destroyed, suturing with catgut. The wound healed by first intention, and sensibility returned in forty-eight hours; nutrition improved. After five months motion returned in the fingers. In another case four inches of the sacral nerve of a dog were inserted into an ulnar, with a return of sensation in thirty-six hours.

Primary grafting is, of course, much more certain than secondary, as trophic changes naturally interfere greatly with the success, although nerve-function is not impossible after a long period of time.

A ferrule of decalcified bone stitched in the gap after invaginating the ends, is recommended by Vaulair,[2] but such isolation of a nerve from surrounding supporting tissues may result in sloughing. In my experience the bone tube disappears so quickly that it is of no use either in guiding the two ends in reaching each other, or in protecting them from subsequent cicatricial contractions.[3]

Another method of splicing consists in splitting longitudinally the nerve through its center for the necessary length, say, one inch, then cutting out one side and reflecting the flap upon its base. The opposing end is then treated in the same way, the flap being made upon the opposite side so as to fit against the corresponding flap. The two can then be sutured.

MacCormac exposed a nerve and attached it by two loops of kangaroo tendon to the inner edge of the triceps, and sutured the fascia with catgut. Decided improvement took place. By the same method Pearce reduced a dislocation forward of an ulnar nerve.

Croft exposed and sutured a nerve to its sheath. Gould also performed a similar operation.

Bergmann adopted another course, viz., resection of the humerus, in order to shorten the arm so that the divided nerve-ends could be brought together, but this seems an unnecessary procedure.

Dittel reports a case in which the ulnar nerve was split for seven centimeters. Flaps were turned up and united end to end, with the result of a restoration of sensation and of movement under prolonged electric treatment.

Vucetic reports an injury to the ulnar nerve attended with loss of substance. Flaps were cut from each end, and catgut sutures employed. Suppuration took place, but the final results were good.

In all cases of nerve-grafting it is vitally important that the animal furnishing the nerve should be young, as the regenerative power is much greater at an early period of life, and in cases of nerve-suture it has been noted that young patients are more hopeful than older ones. The direct method of suturing is usually employed, although the indirect plan has been used in a number of instances.

Pain and stiffness may follow either primary or secondary suturing, but the functions return to a remarkable degree. Sometimes the first evidence of returning sensation is a feeling of tingling or of numbness, followed by a recognition of the fact that certain sensations are being received. This increases until finally restoration more or less complete takes place. There is at first a sense of confusion in regard to sensations, as it is impossible to join filament to filament. A filament of a nerve that primarily brought intelligence from a toe may have been united with a filament presiding over a leg-area; hence, reëducation is necessary, and this is entirely a question of time. It is well known that after an amputation many years are not sufficient for the reëducation of the brain in regard to the area from which new impressions are received.

Although at the time of secondary suturing, degeneration has progressed, yet the speedy restoration of nerver function after injury shows that by some method transmission of nerve-force is brought about; the prognosis, therefore, is very favorable, and no case should be allowed to suffer for want of the attempt to secure union. We may give this class of patients a large degree of hope as to prognosis, as even without operation great improvement has been found to take place, showing that we may have return of sensation in a divided nerve without actual reunion. The functions of motion and sensation both return if continuity of the axis-cylinder has been restored. The symptoms of nerve-regeneration to be expected then will be active muscular contractions, improvement of atrophy and faradic irritability of muscles that have been previously paralyzed.[1]

The question of age materially affects the rapidity of regeneration; this I have proved personally by experimentation, and find that union takes place much more quickly in the pup than in the older dog. Bowlby thinks that the musculo-spiral particularly presents great energy of union, even more than other nerves.

In one case reported at St. Bartholomew's Hospital, in which the ulnar was operated upon by Mr. Marsh, twelve years after the injury, there was decided gain of motion and sensation. No patient, therefore, should despair, but it is well to warn against the expectation of too immediate results. Improvement is sometimes decided only two years after an operation. Of course, the cases operated upon years after an accident are not as hopeful as early ones, yet they are worth the attempt. Whenever improvement fails to take place it is probable that a change has occurred not only in the nerve but also in the central cells. When there has been sloughing and suppuration the amount of dense cicatrix will have much to do not only with preventing union but also with secondary results. If, however, each nerve is freed from surrounding compression this danger is lessened, although a wide line of reunion will certainly interfere with nerve-transmission.

The fact that degeneration occurs in the motor cells of the spinal cord, which are the trophic centers of the muscles, probably explains why in some cases motor

[1] British Med. Journ., 1892, vol. i, p. 602.

[2] Archives de Physiologie, 1882, vol. x, 595.

[3] Internat. Med. Magazine, April, 1894, Experiment No. XII.

[1] A most satisfactory study of nerve-regeneration is contained in Howell and Huber's admirable article in the Journal of Physiology, 1892, vol. xiii, No. 5.

power cannot be restored. Sensation may return when operations are done years after the nerve has been severed, but motion may not so often be restored. Within a year good results may be looked for; the difference of a few weeks or a few months is not believed to affect materially the chances of success. After this time there is a smaller ratio of cures.

I had recently an opportunity of observing a lad upon whom I operated nearly ten years ago for a glass division of the ulnar, which was united and sutured almost immediately after the accident. While able to use the little finger, and while the ring-finger has slight sensation, there is atrophy of all the muscles of the small digit, and that portion of the hand, while useful, is feeble.

In many cases in which no improvement has at first occurred, gradual gain for some months has taken place at a later period.

As regards the errors in reporting various nerve-results after operation the observations of Zander[1] are interesting. His reports tend to show that surface-manifestations are unreliable even as regards such distinct tracts as the divisions of the median into the ulnar and radial. The facts of the case probably are that divisions are uncertain, and that irregularity of distribution and free anastomoses are frequent. Arloing and Tripier have shown that in order to secure absolute loss of sensibility in the foot of a dog, it is necessary to divide every nerve leading to the part.

It is possible that some of the immediate excellent results may have been due to the fact that a region (for instance, the hand) is supplied with nerves from a number of sources, and other vicarious or substitutive nerves may have been brought into play, thus deceiving the surgeon, who may unwittingly report a return of sensation early. A number of these cases are cited by Weir Mitchell,[2] showing that sources of error are common, and Létiévant has forcibly called attention to the same subject.

In many cases of rapid return of function, especially in primary suture, it should be remembered that the supplementary activity of other nerves may give rise to a series of remarkable results, not because a nerve has been sutured, but because the patient has recovered from the shock of the injury, which previous to the operation may have temporarily annulled both sensation and motion. This vicarious action of nerves has been well demonstrated by Mitchell, Savory and others, and errors in observation have been carefully depicted. Errors may occur, as in the case of Pirogoff, quoted by Weir Mitchell, in which case it is possible that the surgeon labored under the same mistake that happened to myself in one of the experiments already alluded to.[3] In this case I was probably as certain as Pirogoff that the nerve had been completely divided, as it was distinctly before my eyes, and yet subsequent examination proved that a large bundle of fibers had escaped section. Naudorfer and Schuh had a similar experience. In Pirogoff's case sensation was normal, but he had *not* sutured the nerve.

Howell and Huber's[4] tables on secondary suturing show that, as a rule, secondary suturing is more hopeful soon after an injury, although results have been excellent even after a long period of time; the average time for the return of motor power is about six months, and for the return of sensation three months—a peculiar fact that shows itself in all nerve-experiments.

Their summary includes 80 cases of nerve-suturing secondarily, with 38 per cent. of successes and 50 per cent. of improvements, making 88 per cent., with only 12 per cent. of failures.

They have presented the profession with most valuable deductions from the recorded cases of suture, and conclude that in primary nerve-suture the nerve-function will in all probability be restored either completely or partially, that young patients are more hopeful than older ones, and that clinical as well as physiologic evidence is against the possibility of immediate union.

In primary suturing the prognosis is exceedingly good, and improvement may be expected in nearly all cases.

Rapid return of motion, and more particularly of sensation, has been frequently noted, but the errors of interpretation have been already noted, and it seems to be definitely proved that the transmission of a nerve-impulse requires a continuous axis-cylinder. Nerve force is a vital force, and though resembling electricity is entirely distinct.

The natural inference from cases of the kind related is obviously that in all cases in which nerves are accidentally divided union should be aided by suturing; and in the majority of cases their function will be restored if the attempt is made within a reasonable period of time.

The prognosis of recovery of function after primary and secondary suture of nerves is very much better now than formerly. Even in secondary suture great improvement is almost certain to follow, and complete success is to be expected in the majority of instances.

Primary suture. Of 117 cases of primary suture collected for me by Dr. John H. Rhein the following summary is made:

The median nerve was sutured 41 times; the ulnar, 38; the median and ulnar, 30; the median, ulnar, and radial, 3; the radial, 4; the musculo-spiral, 3; the sciatic, 1; the external popliteal, 1; the posterior tibial, 1; the anterior tibial, 1.

It will thus be seen that the nerves of the upper extremity have been subjected to this operation in 113 cases, and also that the nerves of the forearm suffer injury more frequently than those of the upper arm. This may be accounted for by the fact that many of the wounds were due to glass, and caused by the effort of the individual to save himself by extending his hand. Knife-cuts are also much more frequent in this region.

The *nature of the injury* was as follows:

From sharp instruments in 62 among 81 cases; from dull instruments in 8; from nerve-injury during operation, 14.

Sex. As might be expected, males are in excess of females, as accidents are much more frequent in men than in women. In the cases recorded, 86 males were injured and 20 females.

Age. Under ten years (the youngest being two years) there were 8 cases; from ten to twenty, 34; from twenty

[1] Berliner klinische Wochenschrift, 1891, Feb. 24.
[2] Injuries of the Nerves. Mitchell, Morehouse, and Keen.
[3] International Medical Magazine, April, 1894.
[4] Journal of Physiology, 1893, vol. xiv, No. 1.

to thirty, 31; from thirty to forty, 15; from forty to fifty, 18; from fifty to sixty, 3.

The exact time after injury is recorded in only a few instances, but it is fair to assume that the majority of operations were performed on the first or second day, and that these were all primary sutures.

Material used. Catgut was employed in 72 cases; silver wire in 5; silk in 7; kangaroo-tendon in 1.

Distance of separation of ends. This unfortunately is recorded in only a few instances. The smallest distance given is 1 cm., and occurred six times; 2 cm., three times; 3 cm., once; 4 cm., once; 2 inches, once.

Return of sensation. The record covers only 39 cases. Sensibility returned on the same day as the causative accident in 7; on the next day in 2; within a few days in 17; after one week in 13; after two weeks in 6; after four weeks in 7; after six weeks in 2; after two months in 3; after six months in 4; after one year in 1; after one and one-half years in 1.

Return of motion. This occurred on the day of the injury in 1; on the next day in 1; after several days in 4; after one week in 6; after two weeks in 2; after three weeks in 5; after four weeks in 3; after two months in 5; after three months in 1; after six months in 1; after one year in 4. One "cure" was reported in seventeen days.

Results. Among 123 cases, one death is reported a few weeks afterward (the cause was not stated), and another took place from gangrene sixty-five days after operation. Improvement in one day is reported in 6 cases; complete return of motion and sensation, one year later, in 10 cases; slight improvement at the end of this time in 10 cases; partial improvement at the end of one year in 3 cases. Slight improvement is also noted in several cases at the end of two and three months, and in other cases complete return of motion and sensation is recorded at the end of one week, eighteen days, two months, three months, six months, ten months, and one year respectively.

Negative results are given in 2 cases.

Sensation is reported normal at the end of two years in 3 cases; in 1 case at the end of four months. Four cases are reported as well in two years, 5 at the end of five years, and 5 at the end of three years. In 14 cases motion and sensation are noted as good.

Secondary suture. A review of the extensive and valuable tables made for me by the indefatigable efforts of Dr. John H. Rhein shows that of 130 cases of secondary suture the median nerve was involved 35 times; the ulnar, 34; the median and ulnar, 20; the musculospiral, 10; the brachial plexus, 1; the fifth cervical, 1; the radial, 29; the sciatic, 6; the popliteal, 1; the external popliteal, 2; the posterior tibial, 1; the perineal, 1; the posterior inter-osseous, 1.

As might be expected, there is a preponderance of males, as they are much more subject to accident. There are noted of males 98, of females 31.

The character of the accidents is as follows: from sharp instruments, 96; from dull ones, 5; from gunshot-wounds, 6; as a result of nerve-injury during operation, 3.

The character of the suturing material used was catgut in 47 cases; kangaroo-tendon in 14; silk in 10; horsehair in 6; silver wire in 2; decalcified bone in 1.

The time of operation after injury was fifteen days in 12; one month in 15; two months in 19; three months in 14; six months in 19; nine months in 20; two years in 10; six years in 1; nine years in 1.

The return of sensation is definitely recorded only in a few cases. This was noted on the next day after operation in 12; several days afterward in 17; within the first two weeks in 21; after one month in 19; after three months in 2; within six months in 12; after one year in 1; after two years in 1.

Motion returned on the next day in 1 case; after several days in 3; within the next two weeks in 9; within a month in 18; after six weeks in 1; within six months in 13; after one year in 3; after two years in 1; after three years in 2. In 1 case it was reported that motion had not returned at the end of a year.

The amount of separation was one-half cm. in 18 cases; one cm. in 9; two cm. in 4; three cm. in 7; four cm. in 9; seven cm. in 1; ten cm. in 2; one inch in 1; two inches in 8.

The results are given as follows: One death from hydatids. Improvement within the first month was noted in 6 cases; "motion and sensation improved in six months in 11 cases." Complete return of motion and sensation took place in from one week to six months in 17 cases. A similar result is reported as having occurred in one month in 7; in six months in 14; in one year in 25; in two years in 18; in four years in 2. Fourteen cases are reported as cured; 3 as completely cured in five years. Other cases are reported as showing a slight improvement in one, two, and three years respectively. These should be put down as unsuccessful cases. The total number of cases slightly improved is 10; either greatly improved in motion and sensation or absolutely cured, 102; very slightly improved, or not improved at the end of a year, 15; 1 death resulted from hydatids; thus giving 80 per cent. improved by operation, with practically no risk to life.

CONCLUSIONS.

1. Immediate suturing of a divided nerve should never be neglected, as the result is eminently successful as regards restoration both of sensation and of motion.

2. Clean end-to-end suture should be secured if possible. In wounds inflicted by a sharp instrument this is easily attained; in torn wounds it is wiser not to remove more of the nerve than is imperative, as a nerve continuously stretched unites less readily than one which lies loosely. Whenever a portion is necessarily sacrificed better union will be secured by clearing the nerve for a considerable distance, stretching it thoroughly so as to obtain end-to-end suture if possible, and then stitching. When it is impossible to join the ends other material may be grafted into the gap, or the nerve may be spliced by flaps cut from its own substance.

3. The best suturing-material is fine chromicized catgut inserted by means of a small, round needle directly through the sheath and body of the nerve. Two sutures are usually advisable, crossing each other at right angles.

4. Secondary suturing offers good hope of success, and should be attempted even if years have elapsed since the accident. Repeated operations may ultimately succeed if the nerve is thoroughly cleared, stretched, and brought together.

5. When the loss of nerve-substance has been large,

a nerve-graft, or a section taken preferably from a freshly amputated limb or from an animal, should be inserted in the gap. This usually gives better results than the splicing-operation of splitting the nerve and turning the flaps into the gap.

6. Decalcified bone-tube, which has been employed for guiding the ends toward each other, is so rapidly absorbed that it is of but little service.

7. Restoration of function often takes place many months after the operation.

8. My own experiments agree with those of other operators and prove that the distal portion of a severed nerve rapidly degenerates, as does also an interposed graft; yet that transmission of function is possible and that subsequent regeneration may take place as regards both sensation and motion.

9. During the healing-process the part should be placed absolutely at rest, and the nerve slightly relaxed if possible.

CLINICAL MEMORANDUM.

AN UNUSUAL CASE OF SYPHILIS.

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THE following record of a case of syphilis is more than usually interesting, as the symptoms and course of the disease presented very decided irregular conditions during a period covering eighteen months, during a portion of which time the patient was under my care. I wish to emphasize the extreme malignancy of the disease, the persistent cutaneous manifestations, the therapeutic difficulties encountered, and the thorough carelessness of the man in following directions as to treatment.

W. W., a male, forty-three years old, has been under observation for a period covering twelve years. During that time he has been in the habit of taking periodic "sprees," and while each of these would last only one, two, or three days, he nevertheless kept more or less under the influence of liquor for several months consecutively; and although a married man and one of the best of husbands in the interim, he would often, during these sprees, have a lapse of sexual virtue, which in a number of instances resulted in attacks of gonorrhea. This condition generally responded to proper treatment and was cured in a few days. Unfortunately for him, the last of these sprees occurred about the 15th of November, 1892, while he was away from home, at which time there appeared the initial lesions of syphilis. He permitted himself to go untreated for about five weeks, at the end of which time he presented himself at my office. On December 24, 1892, the man stated that he had always been in the best of health, with the exception of the preceding troubles. He was five feet seven inches in height, and weighed one-hundred-and-seventy-five pounds.

Upon examination I found an initial lesion just behind the corona glandis and on the superior surface of the penis. I advised the use of the official mercurial ointment, and upon his return one week later the lesion was found to be entirely healed. As he was weak and not at work, I ordered one-sixteenth grain of mercuric chlorid, to be taken every six hours, for its tonic effect only; but it was found, after he had taken five doses, that he became salivated, and the drug was discontinued. After this (January 3, 1893) the patient was lost sight of until April 9th, when he again called, stating that he had had no treatment since last seeing me.

At this visit I found that the man had been suffering from lesions upon the skin for the previous three weeks. Upon removing his clothing I noticed that these lesions were scattered here and there over the body-surface. Upon the face the lesions were situated directly above and between both eyes—"corona veneris;" another was found occupying a position directly above the left eye; another covered the right ala of the nose; there was one immediately below the angle of the jaw on the left side, and one was situated in the median line of the neck below the chin. Each shoulder was the site of a lesion; the left arm upon the outer side contributed four similar lesions, and there were three upon the internal surface. There were also three surrounding the right wrist; nine lesions were encountered upon the chest and abdomen, while only five were seen upon the posterior portion of the trunk. I also found twenty-five lesions upon the left leg, the right contributing ten more. Upon close examination I found that all were examples of the large, flat, pustular syphiloderm, and that each lesion (all lesions were circinate) ranged in diameter from one-fourth of an inch to two inches, and all were covered with a rupia-like crust, in some instances raised about one-half inch. There was apparently no discharge from any of them, but upon removing one of the crusts I found a decided exudation of pus. I advised mercury protiodid in doses of one-fourth grain to be taken three times a day, and after the man had taken three or four pills I was again confronted with the constitutional effects of the drug. I changed the remedy and gave potassium iodid in small doses, with the understanding that the dose was to be increased.

On June 1st the man complained of severe pain in the head, which, in fact, was only a sign of a cerebral neuralgia; but the pains resembled very much those found in connection with a gumma of the brain. These pains, peculiarly, were more noticeable at night, and only in the daytime when he was alone. Thinking to assist the potassium iodid, of which he was taking fifteen grains three times a day, I advised inunctions of half-strength mercurial ointment. Salivation again occurred after three or four applications, and, of course, these were discontinued, and after a week, all signs of the former characteristic effect of the drug having disappeared, I again gave him the bichlorid, but in doses of $\frac{1}{200}$ of a grain three times a day; but the same effect was produced after a few doses.

On June 10th, at my request, the man was admitted into the wards of St. Agnes' Hospital, under my care. The pains in the head seemed to be very much worse, and in fact so much so that I was sure that a gumma was present. At this time he was given hypodermics of morphin before sleep was induced, and the potassium salt was increased to twenty grains three times a day. These means were continued for two weeks, when he was again removed to his home. On June 24th the pains had entirely left the head, but

at this time he complained of general neuralgia (more properly a myalgia), the pains extending over the entire body, there being no one portion that was exempt. From this time he began to lose power in every muscle, and consequently was confined to bed, and simply remained in the position in which he was placed by the attendant. At times, while lying in one position, the pains would become severe in a portion of his body, and then he would be changed in bed, with relief for possibly a half-hour, when another change would be demanded. During all this time his appetite remained of the best.

On July 6th entire disappearance of the myalgia was noted, but the man was still confined to his bed and unable as yet to move any portion of his body—the head, the trunk, or the extremities. I noticed at this time that he was losing flesh (present weight 125 pounds) so rapidly that I thought that death would surely occur. His voice began to fail. He was taking thirty grains of potassium iodid three times a day. On July 10th he had lost his voice entirely, and on July 14th he had several chills, for which I advised large doses of quinin.

On July 16th the chills were entirely relieved, and I gave cod-liver oil, ʒij, three times a day. On July 23d the man used the right hand slightly and the voice had returned. He had no pain whatsoever. I noticed that the crusts which, up to that time, had remainded as described, had fallen off, leaving a spot having the color of raw ham. On July 27th he was able, with the assistance of the nurse, to sit up in bed for an hour. On August 3d the potassium iodid was increased to forty grains three times a day. The man was able to stand on his right foot, but had no power in the left leg whatever. On August 10th he was able to walk about five steps, with slight assistance, but there was still no power in the left leg. On August 20th, by supporting himself, and without other assistance, he could walk five or six feet, and on September 1st, with assistance, he could walk about twenty feet. On September 25th, without other assistance than crutches, he was able to walk twenty-five feet. The iodid was now increased to fifty grains three times a day. On October 20th, with one crutch and one cane, the man could walk about thirty yards; although he still had very slight power in the left leg, he could stand upon the right foot without other support. The lesions showed a very dark pigmentation. On November 1st he walked one hundred yards with the assistance of his crutch and cane. By December 1st he walked one-half mile, having his crutch with him, and on January 1st he walked three miles, still having his crutch with him, because he was afraid to go without it, as he was somewhat unsteady as yet on his feet.

The man was again lost sight of until about the 9th of March, when I saw him on his doorstep, and he stated that he had been wearing some electric apparatus. He was unable to walk, or even to stand on his feet. Since that date I have not seen him.

An Anti-Corset League has been formed in England, and it is to be represented at the coming Health Exhibition at Liverpool. We very much fear it will be another of the many failures to try to make women sensible in matters of dress. A young schoolgirl thinks she must have a corset before she is in long dresses. Great is Fashion and it will prevail!

THERAPEUTIC NOTES.

PAPAIN AS A REMEDY FOR TENIÆ.

BY ROBERTS BARTHOLOW, M.D.,
OF PHILADELPHIA.

THE apparently successful use of papain in a case of *tænia solium* is the occasion of this letter. The remedies most successful in the expulsion of this parasite are so disagreeable and so difficult to take, for the most part, that it is desirable to have some agent free from these objectionable features. I have happened lately to know of a case in which an immense *tænia solium* was expelled during a course—it at least may be said—of papain, when various effective remedies had been taken in vain. The unfortunate host had been passing segments for several weeks when the first efforts were made by his physician to procure the expulsion of the worm. There were tried successively the "Gardner Extract of Pine Needles," a terebinthinate preparation having some reputation as a teniafuge; naphthalin; pumpkin seeds; decoction of pomegranate root, and Tanret's pelletierin; croton oil, etc.; but they all failed to expel the parasite or indeed any considerable number of segments. The harsh remedies irritated the mucous membrane, and the repeated failures discouraged the patient. Under these circumstances, by my advice, he began the use of papain, taking ten grains three times a day after meals. This ferment, although of vegetable origin, has properties similar to those possessed by pepsin and pancreatin, and it has, also, been employed successfully as a remedy for tapeworm, especially in children. The theory of its action entertained was that, having a solvent action on albumin, it must destroy the worm, which is an albuminous substance. The result in this case is clearly adverse to this theory, for in a few days after it was begun segments passed in considerable numbers—so many as twenty-three in one day—when the patient, finding the parasites much affected, without further delay, on his own account, took a dose of the pine-needle extract and followed it with two ounces of castor oil. Apparently this experiment was, also, a failure, for the day passed without any result, and in the evening the contents of the stomach were evacuated. At 8 P.M. some abdominal pain was suddenly felt, and in a few minutes an immense *tænia solium* was passed complete. This formidable parasite was found by actual measure to be twenty-five feet in length. It seems in a high degree probable that the papain exerted a toxic action on the worm, causing it to relax its hold on the mucous membrane, for, as is usual under such circumstances, it was discharged in a mass, coiled up and motionless, but when hot water was poured over it the motion of uncoiling began, showing that it was stupefied.

I need hardly observe to the readers of THE NEWS that papain is a principle—a ferment—contained in the juice of the *Carica papaya*, and is employed as a substitute for pepsin and as a solvent of the membrane of croup or diphtheria. As it is not a poison or an irritant, it can be used freely in the conditions for which it has been prescribed.

1527 LOCUST STREET.

Dr. Charles A. Power, formerly of New York, has removed to Denver, Col.

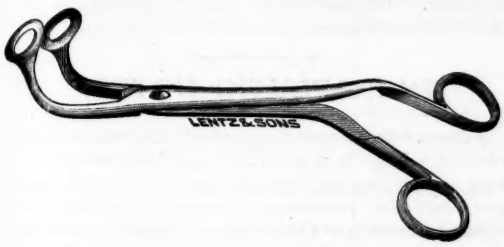
NEW DEVICE.

A NEW POST-NASAL FORCEPS.

By ARTHUR W. WATSON, M.D.,
PROFESSOR OF DISEASES OF THE THROAT AND NOSE IN THE PHILADELPHIA POLYCLINIC.

As there are so many forms of post-nasal forceps already before the profession, I have felt some hesitation in adding another to the list. But I have used the instrument here described for the last two years in a large number of cases, and it has proved so satisfactory that I think it may be found of advantage by others.

In nearly all the forceps for the removal of post-nasal adenoids with which I am acquainted, either the blades are too small, or their cutting-edge is too short, and when working anteriorly the cutting is done with the side instead of the end of the blades. To overcome these defects I have had made the instrument shown in the accompanying illustration. It is of the kind known as



gouge-forceps; and is of the usual length, about eight inches, with a post-nasal bend of an inch and a half. The blades, which are the important feature of the instrument, are oval in shape, with the long diameter transverse to the shaft, making the upper or cutting-edge long—five-eighths of an inch. This edge is set at an angle to correspond, when in position, with the slope of the vault of the pharynx. The anterior projection enables the operator to reach the anterior part of the naso-pharynx without having to depress the handles sufficiently to alter the relation of the cutting-edge to the pharyngeal vault. As the blades are fenestrated, they present no obstacle to the forceps taking a large bite and cutting deeply into the tissue. The instrument is made by Charles Lentz & Sons, of Philadelphia.

MEDICAL PROGRESS.

Abscess of the Right Cerebellar Hemisphere, with Paralysis and Fits Limited to the Same Side.—DRUMMOND (*Lancet*, No. 3700, p. 190) has reported the case of a girl, nine years old, who for three years had had a purulent discharge from the right ear, with the development, a few days before coming under observation, of headache, vomiting, paralysis of the right arm, and right-sided convulsions. The child lay in bed on the left side. The right arm was helplessly paralyzed, the right angle of the mouth was weak, and the leg on the same side showed evidence of paralysis, although a certain degree of voluntary power remained. Convulsions recurred at intervals of an hour, and sometimes more frequently. The spasm began in the face, and almost immediately extended to the arm and occasionally to the leg, but remained limited to the right side. In the intervals the child seemed to regain consciousness, and then it was observed that she was unable to utter a syllable, although to a certain extent she understood spoken language. There was early optic neuritis. No obvious discharge was to be detected from either ear, though cotton introduced in the right meatus was soon moistened with offensive purulent material. A perforation of the left tympanic membrane was discoverd, with some fetid discharge. It was decided to explore the temporo-sphenoidal lobe on the left side, but an abscess was not found. The left arm-center was then exposed, and also the left lobe of the cerebellum, but without disclosing a purulent focus. For a few days succeeding the operation the patient seemed to be somewhat better, the fits becoming less numerous and consciousness returning, but the arm remained paralyzed, and the speech-defect was unaltered. Death took place a week later, and on post-mortem examination a large abscess-cavity, containing about an ounce of pus, was found in the left lobe of the cerebellum, located near the surface and about three-quarters of an inch from the medulla. Careful exploration failed to disclose a lesion of the left side of the brain.

The Staining and Mounting of Tube casts and other Organic Urinary Deposits.—BRAMWELL (*British Medical Journal*, No. 1749, p. 8) makes the following useful suggestions for the study of urinary sediments. An ordinary conical urine-glass is filled with equal parts of urine and an aqueous solution of boric acid, and set aside until the deposit settles. This is then removed by means of a pipet and transferred to an ordinary test-tube containing about half a dram of a solution of picrocarmin, and the two are thoroughly mixed and set aside for twenty-four hours. Some of the sediment is then removed, by means of a fine-mouthed pipet, and mounted. If there is reason to suspect the existence of amyloid disease of the kidney a solution of methyl-violet may be used instead of that of picrocarmin. In order to bring out the fine details of the tube-casts stained in the manner described, and in order to preserve them as permanent preparations, they may be mounted in Farrant's solution, consisting of gum arabic and distilled water, each four parts, and glycerin, two parts, with a little camphor. A small test-tube is filled three-quarters with this solution, and in it is placed, by means of a fine-mouthed pipet, the stained deposit from the test-tube containing the mixture of urine and solution of picrocarmin. The smaller tube is then securely corked, inverted two or three times in order to facilitate thorough mixture, and put aside until the sediment has had time to settle. In the course of three or four days a minute drop of the deposit is removed from the bottom of the tube by means of a fine-mouthed pipet and placed upon a slide and covered. The preparation may in the course of a few days be sealed in the ordinary manner. If the preparation thus mounted is overstained with the solution of picrocarmin the deposit should be transferred to fresh Farrant's solution. Any organic urinary deposits may, of course, be stained, mounted, and preserved in the same manner.

The Thyreoid Gland and its Relation to Myxedema.—LANZ (*Zur Schilddrüsenfrage; Sammlung klinischer Vorträge*, 1894, No. 98) in an elaborate treatise upon the thyreoid

gland and its relations to myxedema, reports the results obtained from a series of experiments made by him upon cold-blooded animals from which he removed the thyreoids. He assumes that the symptoms in cold-blooded animals are much less acute because of the slowness of their metabolism. Fishes, amphibians, and reptiles were employed in the course of his experiments. The removal of the thyreoid from fifty sharks gave an almost completely negative result, all recovering quickly from the operation; the lives of the sharks thus treated, however, were notably shortened. Bony fishes do not survive the operation of thyreoidectomy, but reptiles bear the operation well. In none of his operations did he find a subsequent enlargement of the spleen. He was unable to determine the existence of any relationship between the pituitary body and the thyreoid gland. As regards the influence of food upon thyreoid cachexia Lanz claims that poorly-nourished animals withstand the cachexia better than those that are well fed. Animals without thyreoids do not stand narcosis so well as normal animals, and do not respond to efforts at artificial respiration. Among the symptoms following removal of the gland are pronounced diminution of the blood-pressure, leukocytosis, and great increase in the number of blood-plaques, marked disturbance of respiration, and various digestive disorders—dysphagia, anorexia, vomiting. The experiments of Lanz upon himself do not confirm the experiences of the English experimenters. He has not observed any quickening of the heart's action after the ingestion of fresh thyreoid glands. He suggests the treatment of akromegaly with pituitary gland.

Electric Illumination in Abdominal Surgery.—KELLY (*American Journal of Obstetrics*, September, 1894, p. 348) has adopted the electric light as a perfect means of artificial illumination in abdominal surgery, viewing it as an indispensable part of his armamentarium. In hospital-work he uses a portable drop-light consisting of a sixteen-candle power lamp attached to a short, wooden handle, and connected with the source of supply by insulated wire cords. The light was at first used to secure independence of sunlight, but it was soon found that in many cases it is superior to even the brightest sunlight. By means of such a light, held in the hand and reflected according to will in any direction, every accessible part of the pelvis appears with vivid distinctness, and the smallest oozing vessels can be picked up and torn surfaces accurately united by delicate sutures under direct inspection. Half of the lamp may be surrounded by a reflector, painted black and covered with flannel on its convex surface, in order to protect the eyes and face of the operator from light and heat. The light is to be held steadily and properly directed, about six inches above the patient's body and a short distance below the operator's face. When a street-current or house-current cannot be tapped, a good light may be secured by means of a portable storage-battery. Under some conditions a head-light may be employed, the light being condensed by a reflector behind and a lens in front, the lamp being attached to a flexible steel band which fits the head.

Trephining of the Skull for Spastic Paralysis.—SMITH (*Lancet*, No. 3700, p. 193) has reported the case of a boy, five and one-half years old, whose arms were contracted upon his chest, the legs crossed and partly flexed at the thighs, and unable to stand. Although quite intelligent, he was able to articulate but a few monosyllables. The symptoms had been present from birth, and no material improvement had been hoped for. A transverse depression was found in the occipital bone, two and one-fourth inches wide and about an inch from above downward, just below the occipital protuberance. The uncertainty of the results of operation having been explained to the parents, and they having agreed to assume all risks, two openings were made in the depressed bone by means of a trephine an inch in diameter and united into one. The meninges projected forcibly upward through the opening, but there was no pulsation of the brain when first exposed, but before the completion of the operation pulsation was quite natural. The wound healed by first intention. There was at once a marked improvement in the child's general condition, and the limbs became gradually more relaxed and the legs less drawn up, and the little patient became able to extend the right hand to be shaken, as he had not been able to do before. The improvement was continuous, and the child slept more quietly than before the operation.

THERAPEUTIC NOTES.

A Case of Medicamentous Lipuria.—SCHLOSSMANN (*Archiv f. Kinderheilk.*, B. xvii, H. iii, iv.; *Wiener med. Presse*, 1894, p. 1347) has reported the case of a child, a year-and-a-half old, presenting dyspeptic symptoms, but otherwise healthy, to whom was administered a prescription containing a half-ounce each of castor-oil and olive-oil, with one drop of peppermint-oil, a teaspoonful at night and half a teaspoonful in the morning. The child began to improve, but it was observed that it was passing a smaller amount of urine than normal. The first passed was quite opaque, of whitish-gray appearance, somewhat resembling dirty milk, and contained many fine particles in suspension. On permitting the urine to settle in a conical glass it was found that the turbidity was due in part to the presence of alkaline urates and in part to the presence of fat. The filtered urine did not respond to tests for albumin, and the sediment contained no cellular elements. The little patient soon recovered from her gastro-intestinal derangement, and the urine and micturition became normal in the course of two days. From a diagnostic point of view it is pointed out that a condition of pathologic lipuria is not to be assumed until the ingestion of a readily absorbable fatty substance is excluded.

Two Cases of Nitro-benzol Intoxication have been reported by GRIECHOW (*Wratsch*, 1893, p. 13; *Schmidt's Jahrbücher*, 1894, No. 8, p. 139) following the ingestion of one or two drops, and five or six drops respectively, of oil of mirbane in brandy. The symptoms presented were weakness, vertigo, dyspnea, with increased frequency of respiration, cyanotic discoloration of the skin, dilatation of the pupils, and a characteristic odor of the breath and vomited matters. In the course of three days both patients were practically well, though for a considerable length of time there was complaint of headache and nausea. Forty-two additional cases of poisoning with nitro-benzol have been reported. The drug is a nervous poison, acting on the central nervous system.

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SATURDAY, OCTOBER 6, 1894.

RECENT RESEARCH CONCERNING THE STRUCTURE AND FUNCTIONS OF THE ADRENAL GLANDS.

WHETHER it has been the successful issue of the experimental researches in connection with the thyroid gland which has acted as an incentive, or merely economy demanding that from an excess of workmen in fields already well tilled, some should be delegated to certain neglected and more or less out-of-the-way corners of the domain of inquiry, or whatever may have been the cause, certain it is that during the last two years a remarkable amount of attention and thought has been directed toward those small and as yet comparatively little understood structures in the body—the so-called ductless glands. And when we ransack the literature and estimate the progress made and the results obtained by the workers in these byways, we must admit that while many of the researches have been incomplete and fragmentary, yet, when the fragments are pieced together, outlines of conceptions of function and structure quite new and unsuspected begin to appear, very indistinct as yet, it is true, and broken by many gaps and spaces which have still to be filled up, but nevertheless outlines—surprising, promising and stimulating.

As an example of what may be found out almost for the looking, we wish to call attention at this time to some new points in connection with the supra-renal capsules, which have some bearing not only upon the anatomy, but also, it would seem, upon the physiology of these bodies. Without entering at all into a review of the normal histology of the adrenals, it is of importance, in connection with what is to follow, to refer to one or two of the microscopic features of these organs which have been before noted by a few observers. Of these we shall mention three, viz: (1) occasionally single adrenal cells are present in the suprarenal vein; (2) red blood-corpuscles have been seen included within the protoplasm of adrenal cells; and (3) groups of red blood-corpuscles apparently not within bloodvessels have been observed among the gland-cells, giving the impression of small hemorrhages into the parenchyma of the gland.

MANASSE,[1] working recently, in Von Recklinghausen's laboratory, on the hyperplastic tumors of the adrenals, noticed certain peculiar buds and processes of adrenal cells projecting into the veins, and immediately set about studying normal adrenals to find out whether or not similar structures existed in them. That they did exist in the healthy glands he was able to establish beyond doubt. Besides adrenal cells, occurring singly and in small heaps, mixed with the blood in the veins, he could demonstrate, especially in the medulla, processes of adrenal cells varying in size from small buttons to long strings of cells pressing through the walls of the veins. These were sometimes found floating without any covering within the lumina of the vessels, and sometimes spread out, with bases of considerable width, on the inner surfaces of the venous walls. The free floating processes too could be made out in transverse section, when they had the appearance of small discs of adrenal cells situated within the veins and surrounded on all sides by red blood-corpuscles.

This relation of the adrenal cells to the veins was so striking that MANASSE determined to carry his investigations further. He therefore collected at slaughter-houses the adrenals of horses, oxen, calves, pigs and sheep, removing them with the least possible disturbance from the body and laying them unopened into hardening reagents—alcohol, Müller's fluid, and a 2 per cent. solution of potassium bichromate. The medulla of the supra-renal bodies, with its granular, polygonal cells arranged in cords

[1] Virchow's Archiv, Bd. 135, Heft 2, p. 263.

and irregular networks imbedded in a connective tissue framework, has been especially studied by EBERTH, by v. BRUNN, and by ARNOLD. One of the most interesting characters of the medullary cells described is the deep-brown tint which they assume on treatment with solutions of the salts of chromic acid. MANASSE in his comparative studies found that the substance giving this reaction varied much in amount in different cells—the difference being referable, he thinks, to different stages of physiologic activity rather than to the presence of distinct varieties of cells.

But MANASSE found—and this is to us as interesting as any of his observations—in the veins of the medulla, and occasionally also in the arteries, masses of a substance which, although observable at first glance, were so striking that he thought he must be dealing with an artefact or with a pathologic condition. He saw in these vessels brown, glassy, homogeneous masses intimately mixed with the red corpuscles, and completely filling the lumina so as to form veritable casts. Along with these masses in the veins he could also often make out spherules apparently of the same material as the former, although of a darker-brown color This hyaline substance could be seen in the veins of the adrenals of all the animals examined, when the tissues were fixed in chromate-solutions immediately after death; adrenal glands, however, which had been hardened in alcohol showed no trace of its presence. This fact led MANASSE to think of a connection between the brown hyaline in the vessels and the brownish pigment of the medullary cells, as VON BRUNN had before pointed out that in tissues hardened in alcohol the pigment in these cells was extracted.

His experiments on the supra-renal bodies of animals not only completely confirmed his earlier observations on human adrenals, as far as the projection of columns and masses of adrenal cells directly into the veins was concerned, but also yielded additional results. In some of the smaller veins he could make out a distinct relation between the brown hyaline masses and the contents of the brown cells, of which the intravenous processes of adrenal substance consisted. The membraneless cells of the processes were seen to communicate directly with the homogeneous masses; a portion of the latter still remained within the cells, while part was already within the lumina of the veins, so that cell-contents and venous contents formed a continuous whole. In other places small slit-like vessels could be seen, lined on one side by endothelium and on the other by a row of brown cells, the latter apparently pouring out their contents into the lumina. Following these smallest vessels still further, he came finally to structures which gave an appearance as though the brown masses represented a direct secretion from the brown cells. At these points the canals had a striking resemblance to gland-tubes, being lined completely by brown cells; the lumina were filled with the refractive brown masses mixed with red-blood corpuscles, and occasionally blood-capillaries could be demonstrated communicating directly with the tubes.

The brown hyaline is quite different from what we have been accustomed to understand by hyaline, especially in its chemic reactions. It is easily soluble in alcohol, and is not affected by sulphuric, nitric, or acetic acid, by solutions of magnesium sulphate, ammonium or magnesium phosphate, or by silver nitrate.

To satisfy himself that this brown hyaline was not an artefact due directly to the chemic action of the chromates, MANASSE attempted to find the substance in living animals, and succeeded in making out in the blood of the supra-renal vein obtained from an etherized dog large numbers of small hyaline, glistening, colorless spherules, each about half the size of a red blood-corpuscle. These spherules occurred usually in clumps, bore no relation to the red or white corpuscles of the blood, and were entirely unaffected on treatment with osmic acid. In view of the fact that GOTTSCHAU had described similar findings in the blood from the supra-renal veins of the rabbit, MANASSE apparently regards the hyaline substance seen in the blood as the same as that seen in the veins in his sections.

His paper is carefully written and is extremely conservative in its claims. In closing his article he lays stress on the fact that the question as to whether or not the brown hyaline in the ves els represents a condition existing *intra vitam* must still remain an open one. Neither does he consider it proved that the brown masses represent a secretion of the medullary cells which is carried through the veins into the circulating blood. He remains, for the present, satisfied in his demonstration of the near relation of the adrenals to the veins and to the venous circulation.

We had also intended to refer somewhat at length to the interesting researches of OLIVER, referred to

by PROF. SHÄFER in his admirable address to the Physiological Section of the British Medical Association at its recent meeting, but for want of space must dismiss them in a few words. OLIVER, working with an extract of suprarenal capsules, found that in certain cases in human beings it was capable of producing an increase of vascular tone and a diminution in the size of the arteries. In other words, its effects were quite contrary to those of thyroid extract. Turning to animal experiments, he also proved that both alcoholic and aqueous extracts of the adrenals contained a most potent physiologic substance, which, on injection in extremely minute doses, produced a remarkable effect upon certain parts of the nervous, muscular, and vascular systems. When the vagi were intact after the injection, the heart beat slowly and weakly; when they were divided, these inhibitory influences disappeared, and the heart was very differently affected, the beat gaining enormously in force and frequency; at the same time the peripheral arterioles became much contracted, and there thus resulted an enormous increase in the arterial pressure. Whether this extraordinarily powerful substance is to be looked upon as a useful product manufactured by the adrenals from the blood, and "subsequently gradually used up in the economy for the virtue of its action upon the circulatory system, or whether it is to be regarded as a poison formed by the tissues during their activity, and carried by the blood to the suprarenals, there to be rendered innocuous, we do not as yet certainly know."

When these facts are added to those already known in connection with Addison's disease, with the interesting spectroscopic examinations of the pigment in the suprarenals made by MCMUNN, and with the ablation-experiments of BROWN-SÉQUARD, TIZZONI, ABELOUS and LANGLOIS, and others, the significance and the importance of the adrenal glands, small as they are, cannot fail to be better appreciated. It is to be expected that further investigations will in the near future be rewarded with results fully as interesting as those to which we have just referred.

EDITORIAL COMMENTS.

The Foot-ball Craze is again manifesting itself. The daily papers contain interesting accounts of the friendly practice games of the various teams. Of one college crew we read the following report:

They practise with a desperate fierceness, and quite a hospital list is swelling out. Trainer —— has ordered a number of men to stop practice until they recover their full vigor. As a result two elevens could not be gotten out to-day, so general work in catching, punting, stealing, tackling, blocking, following, and interfering was done.

——'s knee is growing worse instead of better, and he is laid off just as he was beginning to round out nicely and show signs of becoming a valuable man.

Trainer —— is seriously worried about him, and is afraid he will not come about until too late in the year to be of any use. Captain —— received another serious wrench in his knee, and has been compelled to cease practice, although he daily appears in a suit. ——'s foot remains no better, and another abscess is forming. —— has badly bruised his thigh, while a number of the other men have sustained minor injuries.

These, be it observed, are only the playful results of practice-games, and with the brothers of one's own team. What a charming and inspiring picture! This is the end of intellectual and educational training!

Like another disgusted traveller, we might place at the entrance of this wretched road the warning sign:

This road is impassable;
Not even jackassable!

At a dinner of the alumni some time ago the President of Princeton University said in reference to athletics: *I appreciate scholarship as much as any one, but I realize the fact that all of those who go to college do not desire to become fine scholars.*

Could strabismic ethics be more sly or cunning? Could catering to a vulgar fashion be more abject?

But does squint-morality finally pay? Not always. The present freshman class at Princeton is smaller than that of last year, a result to be charged up to foot-ball and hazing, two amusements that logically go well together. It seems that parents and guardians do not quite agree with some of their wiser (?) but weaker educators. Such a result, our readers will remember, has more than once been prophesied in these columns.

The Need of Negro Physicians.—It is said that the average length of life of the New Orleans negro is only 24.2 years. This frightful mortality is also ascribed to the lack of medical attendance and the wretched sanitary conditions in which the colored population of large Southern cities live. It is asserted that probably not one-half of the negroes receive any medical attention during illness. Here is certainly a field for home missionary work. If the foregoing assertions are to any great extent true, it is a disgrace to our civilization and to our common humanity. Forty million dollars have been given since the war toward the literary education of the colored race, but how much more pressing is the problem of their medical care and sanitation! It may be doubted if forty cents have been given toward the education of negro physicians. Much has been done in educating foreign medical missionaries; why not do the more needed duty of medically educating young colored men, thus avoiding a crying public disgrace by enabling them to work among their suffering brethren?

The Anti shaking-hands Society.—Science is a great destroyer of sentiment. Much has been printed in both lay and medical journals concerning the dangers of kissing. Children may no longer buy a cent's worth of ice-cream

in the street, fine ladies will no longer handle money, except in bills never before put in circulation, gloves must be worn whenever touching a door-knob, nurses must never allow children to be kissed by anybody, and so forth. A humorous correspondent of a London journal, taking advantage of this bacteriomania, has perpetrated a joke not only on his own serious-minded journal, but upon many others who have solemnly reproduced it and added great warnings to their readers. This excellent correspondent tells how in the ancient and semi-barbaric city of Baku, in Russia, there has been formed a society of the leading citizens, each member paying a subscription of six rubles; the object of the society is the prevention of handshaking. Any lapse into handshaking is punished with a fine of three rubles. The correspondent tells how a delegation consulted a scientific specialist, who warned them that the hands of their dearest friend might be covered with horrid germs of all kinds, but especially with those of cholera. The Anti-shaking-hands Society was speedily formed.

Prof. R. Matas, of New Orleans—as we shall henceforth be glad to call him—is not so much to be congratulated upon his appointment to fill the Chair of Surgery in the Medical Department of Tulane University as is the University itself in securing such a man. The departmental vacancy had been caused by the untimely death of Dr. A. B. Miles, and a strange tendency was shown to seek elsewhere for a surgeon to fill it. Indeed, the position, we believe, was offered to Dr. L. McLane Tiffany, of Baltimore. Certainly the University has honored itself in choosing Dr. Matas, whose remarkable abilities have long been most widely recognized.

Dr. Matas has now one imperative duty to perform—to work with his characteristic energy and high-mindedness to stop the disgrace of graduating students into the profession after only two years of medical study.

We congratulate *The Journal of the American Medical Association* upon the enlargement of its mechanical and editorial facilities, and wish it increased and ever-increasing success. The *Journal* is in one sense beyond competition. It has a unique place to fill and unique opportunities to advance the science, art, and ethics of medicine. When it shall have been brought to a realizing sense of what it owes to the profession it will become a power for good second to none in the world. Meanwhile THE AMERICAN MEDICAL ASSOCIATION should receive the earnest and thorough and hearty support of every physician in America.

SOCIETY PROCEEDINGS.

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

Abstract of the Proceedings of the Seventh Annual Meeting, Held in Toronto, Ontario, September 19, 20, and 21, 1894.

FIRST DAY—SEPTEMBER 19TH.

THE Association met in the Council chamber of the College of Physicians and Surgeons at 10.15 A.M., and was called to order by the Second Vice-President, DR. GEO. F. HULBERT, of St. Louis, Mo.

An Address of Welcome on behalf of the local medical profession was delivered by DR. JAMES THORBURN, which was responded to by Dr. Hulbert.

The reading of papers was proceeded with, the first being by DR. J. HENRY CARSTENS, of Detroit, entitled "The Incision in Abdominal Surgery—Methods and Results." The author summarized his results as follows:

1. With a small, narrow-bladed, sharp knife, make a clean incision of the necessary length through the skin, and with another sweep or two cut through the linea alba, muscle, etc. Lift the peritoneum with the fingers, open it, and enlarge the incision. The use of the forceps or the grooved director to lift the tissues is unnecessary.

2. In closing the abdominal incision use animal ligature, kangaroo tendon, and catgut. First, carefully bring together the peritoneum in a running stitch, then the transversalis fascia, and the rectus, if the incision is through this muscle. Then carefully bring together, edge-to-edge, the tendinous insertion of the oblique muscles. The fat and loose cellular tissue above can be brought together in one or two tiers, according to thickness. Bring the skin together carefully with Marcy's cobbler-stitch, thus burying all sutures.

3. Then seal with collodion, and if everything connected with the operation has been carefully aseptic, absolute primary union will take place, and the different layers of the abdominal wall will have been brought together as near as possible as they were in the first place, and no hernia will result.

4. In cases of extensive umbilical, ventral, or other hernia, it is best to bring the peritoneum together with an over-and-over stitch of kangaroo tendon or catgut; to make a flap-splitting operation of the ring, bring together with silkworm-gut or silver wire, buried, and then the fat and skin are united with the buried animal suture.

DR. JOSEPH PRICE, of Philadelphia, read a paper on "Plastic Surgery in Gynecology," in which he said that the practice of surgery in all its branches required a mechanical turn of mind and an ability to devise means to accomplish a given end. In order to mend a perineum intelligently the mechanism of labor must be understood and the lines of fracture appreciated. In cases of serious pelvic invasion with accompanying lacerated cervix, it is often better or imperative, first to do the pelvic operation, and to follow this at another time with the cervical repair. The author condemns the plan advised by some, to perform internal and external operations at one sitting. Perineal tears always occur at certain parts of the perineal structure. These tears are either lateral, under the ramus of the pubes, or central, extending from the vagina toward the rectum. The tears toward the rectum tend to run round it rather than through it, owing to the differentiation of structure in these two tubes. The tears of the vagina are always from within outward, and from above downward, and therefore the external, or skin operations, for perineal lacerations are essentially unscientific procedures. All operations for the restoring of the integrity of these parts should be done in the lines of their destruction, and therefore from within outward and from above downward. When the skin of the perineum is involved, mending is merely a cosmetic procedure. The cosmetic element too often predominates in many of the so-called perineal devices. The silkworm-gut with shot is by far the most preferable

material to be used for sutures. As little tissue as possible is to be included within the ligature, and strangulation is to be avoided.

DR. W. B. DEWEES, of Salina, Kansas, next read a paper entitled "The Care of Pregnant Women." The paramount duties of the obstetrician in the study and care of pregnant women may be classified as follows: 1. To discover if the patient be actually pregnant. 2. To determine positively if the impregnation be uterine, or normal, as contradistinguished from tubal, abdominal, or abnormal. 3. To carefully note the pregnant woman's history, including her age, primiparity or multiparity, environments, station in life, general condition of health, period of gestation, as well as her dress, food, drink, and habits of life. To make repeated examinations of the urine, and ascertain the temperature from the time pregnancy is established to the termination of gestation. 4. To make a physical examination for the purpose of accurately determining the diameter of the pelvic straits; the symmetry and size of the bony outlet; the integrity, condition, and position of the vagina, uterus, and other intra-pelvic viscera and adjacent structures; the state of the abdominal muscles; the presence or absence of hernia, varicose veins, tumors, etc.; the shape, size, and condition of the breasts and nipples; the condition of the heart, lungs, mind, stomach, bowels, etc. 5. To observe the state of the fetus, its strength and viability, as well as the implantation of the placenta. The thoughtful obstetrician will advise his patient as to the requisite *régime*. The consciousness of his full duty will impel him to insist upon: 1. Absolutely regular hours and wholesome environments. 2. Plain but nutritious and wholesome food and drink, being principally composed of fresh lean meats, fresh fruits, pure milk, and distilled water. 3. A proper amount of exercise, by walking or light labor on foot, and maintaining the correct erect posture. 4. An open condition of the bowels and skin, which is to be chiefly maintained by proper diet, exercise, and bathing, the wearing of flannels, warm low-heeled shoes, and loose garments, and in rare cases the proper use of laxatives and hot-water enemas.

DR. GEORGE S. PECK, of Youngstown, Ohio, read a paper on "Appendicitis, with Report of Cases."

Case 1. Operation on July 6th, during intervals of attacks; obstruction; a second operation was performed, recovery following. The operation was on July 27, 1894. The appendix was buried in a mass of strong adhesions between the ileum and cecum, and contained large fecal concretions. The appendix was removed in segments. The ileum was returned to the abdominal cavity. During the first six days the highest temperature was 100°; the pulse was 100. On the fifth day there were four attacks of vomiting, the fourth containing fecal matter. On August 4th the incision was reopened and there was found about three feet from the ileo-cecal valve a complete obstruction by a band of dense adhesions. The obstruction was liberated, the ileum brought out in the incision and the abdominal cavity packed with gauze. During the entire day of August 1st the pulse ranged from 140 to 160; vomiting of fecal matter continued at frequent intervals, and tympanites was increasing. At 7 P.M. symptoms of obstruction continued, becoming worse every hour. As a temporary expedient a small opening was made in the ileum, and fecal matter and flatus came away in large quantities; the vomiting then ceased and tympanites disappeared. From the thirteenth day to the present time the patient has had from one to three daily passages per rectum; she sat up for the first time on the thirty-third day. She was discharged from the hospital on the fifty-fifth day after the first operation.

Case 2. The operation was during the fourth day of the first attack. The large appendix was removed, containing two drams of pus and fecal concretions. The adhesions were broken up and the incision packed with iodoform gauze. Uninterrupted recovery followed. The woman was discharged from the hospital the twenty-eighth day after operation.

Case 3. Operation was on the third day of the third attack. The peritoneal cavity was opened and the adhesions broken up; the large appendix was removed; uninterrupted recovery ensued.

Case 4. Operation was during the tenth day. Death from septic peritonitis in sixty-five hours followed. A large abscess cavity was evacuated; the appendix, gangrenous and detached, was washed out by irrigation. Autopsy revealed general septic peritonitis.

Case 5 was one of perforating appendicitis. Operation was during the third day of the attack. Death followed from septic peritonitis twenty-seven hours or more after operation.

Case 6, similar to the previous one, died from general septic peritonitis.

DR. W. G. MCDONALD, of Albany, contributed a paper on "Appendicitis: Observations Based on a Clinical Study of Eighty-four Cases." Out of the great amount of literature, controversial and otherwise, three important landmarks are established: (1) That for all practical purposes all inflammatory processes in the right iliac fossa arise from the appendix. (2) That practically the appendix is always intra-peritoneal, and that any operation undertaken for appendicitis that does not involve the entering of the peritoneum is false in its surgical conception. (3) That idiopathic peritonitis does not occur. That many cases diagnosticated as such are really cases of perforating appendicitis. The author classified the varieties as (1) Acute perforating, fulminating appendicitis with general peritonitis. (2) Acute suppurating appendicitis with local plastic peritonitis and abscess. (3) Subacute appendicitis, variously termed catarrhal, chronic, relapsing, or obliterating appendicitis, or appendicular colic. The perforation occurs very much earlier than is commonly believed. Acute suppurative appendicitis with local peritonitis presents the most favorable field for operation during the attack. The removal of the appendix is to be undertaken with great circumspection when it lies in the walls of an abscess-cavity. The third group of cases does not require operation during the first attack, but if repeated attacks occur, operation during quiescence is demanded. Operative results in these cases are most favorable.

DR. JOSEPH HOFFMAN, of Philadelphia, followed with a paper on "Surgical Appendicitis."

SECOND DAY—SEPTEMBER 20TH.

DR. W. B. DORSETT, of St. Louis, read a paper entitled "Ligation of the Uterine Arteries for the Cure of Fibroid Tumors and Checking Hemorrhage." The

object of this paper was to establish the author's priority as well as the originality of ligation of the uterine arteries for the cure of fibroids. He made observations during December, 1889, and January and February, 1890, and reported a case of atrophy of the genitalia and described the technique of the operation of ligation of the uterine arteries for the cure of fibromatous growths in a paper read before the St. Louis Medical Society, May 17, 1890, and which was published in the *St. Louis Courier of Medicine*.

DR. HENRY HOWITT, of Guelph, Ont., read a paper entitled "Remarks on the Surgical Treatment of Intussusception in the Infant, Based on Two Successful Cases." In it he recommends early abdominal section as being the best method of treatment to reduce the high mortality rate of intussusception in early infancy. Of the two cases cited, one child was at the time of operation under three and the other under six months of age. In regard to the steps of the operation, among other things he advises a small median incision, evisceration, reduction by pressure on the apex of intussusceptium, while the intussuscipiens is drawn in the opposite direction, and forcing the contents of the ileum into the colon before returning the intestines to the abdomen.

DR. ROBERT T. MORRIS, of New York, demonstrated a method of intussusception in rabbits.

The next paper was on the "Treatment of Distention of the Fallopian Tubes without Laparotomy and Removal," by DR. FRANK A. GLASGOW, of St. Louis. The paper was intended to bring before the profession a method of curing tubal distention by means of intra-uterine treatment in contradistinction to celiotomy and removal. By this means the uterine ends of the tubes are made more patulous, and a discharge takes place from the tube through the uterus. The author called attention to the fact that the tubes, so far as his observation goes, are always pervious at the outer extremity of the cornu, hence, when removing them, we must always clamp them before cutting. The obstruction must be within the uterine wall, probably in the endometrium, and hence gonorrheal inflammation is not an adhesive inflammation, and therefore it does not follow that the tubes have a true atresia following this inflammation. His opinion was that the closure is due to a swelling of the endometrium, and hence a closure at the uterine end takes place. When this inflammation and swelling are overcome by pressure and antisepsis, the tubes become patulous again. The intra-abdominal pressure will cause fluid in any pendant portion of the tube to ascend into the uterus. The foregoing procedure can be carried out in three different ways: First, by gradually packing with gauze without anesthesia. Second, by rapid dilatation of the cervix and packing with gauze after curetting. This is done under anesthesia. Third, his own method of dilating by means of antiseptic or sterilized elm-bark tents. These tents are small strips of elm-bark made just long enough to enter the cervix completely and not press on the fundus. They should be kept in an alcoholic solution or mercuric chlorid, 1 to 4000, and have a short string attached by means of which they may be withdrawn. They are partially broken in a number of places for the purpose of making them more pliable. They may be dipped into glycerin or water just before introduction. These tents may be used when it would be impossible to pack with gauze. He had treated twenty or more cases during the past year, and did not recall one in which he did not get some discharge from the tent. All of the cases were either cured or very much benefited.

Introductory remarks by DR. WILLIAM W. POTTER, of Buffalo, were made upon "Inflammatory Disease of the Uterus and Appendages and of the Pelvic Peritoneum." Dr. Potter began by recalling the well-known fact that the pathology of pelvic disease had been entirely reconstructed since 1860, and that now we had come to regard inflammation of the pelvic peritoneum as generally symptomatic of disease of the ovaries or Fallopian tubes, or both. Mr. Tait within the last ten or twelve years, together with men who have worked abreast of him (some of whom are members of this Association) have driven out the theory of pelvic cellulitis that for so long held sway, and now perimetritis and parametritis have been dropped from the gynecological vocabulary. The struggle has been a long one, but abdominal surgeons have demonstrated the truth of this proposition, that pus originating outside of the tubes or ovaries in the non-puerperal state is a very rare condition, and that speaking generally, pelvic abscesses are pus tubes. The largest number of women in the consulting-rooms of gynecologists are those suffering from pelvic inflammation or its residues, hence the importance of the subject under discussion cannot be overestimated. But, he asserted, it is only within the past seven or eight years that anything like uniformity of opinion as to the causes and proper treatment of pelvic inflammation have been adopted. Now, just as we are beginning to agree as to the essentials governing these cases, we are told by a number of agreeable gentlemen who call themselves conservatives, that these diseases do not demand operation, but that they can be cured in most instances by tentative measures, such as diet, rest, electricity, and the like. By denouncing the work of abdominal surgeons as unnecessary mutilation, and stigmatizing it as castration or unsexing women, they have created a panic among the medical journals that is reaching far into the ranks of the profession. The effect of this is to turn back the wheels of time and stay the advance of progress, with harmful results to suffering women. It must be admitted that these so-called conservative men are clever, which makes their subtle and dangerous doctrine all the more damaging in its results.

DR. C. A. L. REED, of Cincinnati, discussed the "Clinical History of Inflammatory Disease of the Uterus and Appendages and of the Pelvic Peritoneum"; DR. L. S. MCMURTRY, of Louisville, the "Causation and Pathology"; DR. JAMES F. W. ROSS, of Toronto, the "Diagnosis and Prognosis"; DRS. M. ROSENWASSER, A. VANDER VEER, J. HENRY CARSTENS, and DR. JOSEPH PRICE, "The Treatment."

DR. JOSEPH HOFFMAN, of Philadelphia, read a paper entitled "Pus in the Pelvis and Abdomen, its Diagnosis and Treatment." He said that pus in the abdominal and pelvic cavities had been treated and considered with far more leniency than pus anywhere else in the human economy. It was the tramp manifestation of all disease. He considered briefly the various organs in which pus makes its appearance, and in the order of frequency he

mentioned the kidneys, the appendix vermiformis, tubes and ovaries, the liver, the pancreas, and the spleen. Each case should be treated according to the demands it makes and according to its complications. There is no good in doing an ideal operation and have the patient die when it is over. Ideal work was that which gives the best result in the line for which it was done. Surgery of the abdomen was a work of self-denial, of trial, of unexpected complication, and lurking disaster. He best can rise to it who has for his motto "my patient." Self-seeking carelessness of lives has its place in the carnage of internecine strife, not in the shadowy sorrows of dying women.

DR. E. W. CUSHING, of Boston, made some remarks on hysterectomy for cancer of the uterus.

DR. JAMES F. W. ROSS, of Toronto, read a paper entitled "Personal Experience with Pus Tubes, when to Operate, how to Operate, and the Results of Operation."

DR. H. T. MACHELL, of Toronto, contributed a paper on "Congenital Diaphragmatic Hernia," in which he reported two interesting cases.

"A New Operation for the Radical Cure of Inguinal and Femoral Hernia," was a paper read by DR. C. A. L. REED, of Cincinnati. The operation which the author devised is as follows: The incision in inguinal hernia is made from a point two inches above Poupart's ligament midway between the anterior superior spinous process of the ilium and the spine of the pubis, obliquely downward and inward as nearly as possible consistent with the access of the inguinal canal to a point at the base of the scrotum. The dissection is then carried into both scrotal and pelvic cavities. The protruding viscus is then reduced and carefully inspected after being brought out above. The sac is then carefully dissected from its scrotal connections and reversed by invagination. It is then opened by two incisions, one toward the pubes, the other toward the ileum, being thus converted into an anterior and a posterior flap. The cord is now dissected loose and placed in the canal, denuded of its peritoneum at its outer angle. The internal ring is closed by several interrupted sutures of animal or buried silk, these sutures being applied beneath the peritoneal flaps formed by splitting the sac, care being taken that in the closure of the ring undue pressure shall not be brought to bear upon the cord. The posterior peritoneal flap is now excised, the stump being ligated, should there be any necessity for doing so. The anterior flap is carried across the now obliterated internal ring and stitched by interrupted sutures to the posterior parietal peritoneum. The external ring is now closed by passing a number of sutures through its pillars externally to the cord, which is now fixed in the internal (pubic) angle of the outlet of the canal. The incision into the abdomen is closed by interrupted figure-of-eight sutures, the internal loop embracing the peritoneum, the aponeurosis of the transversalis and of both oblique muscles, and the external loop embracing the superficial fasciæ, fat, and skin. These sutures should not be more than three-quarters of an inch apart. The incision into the scrotum may be closed in the ordinary way. Drainage should not be employed except in the presence of marked oozing or obvious infection.

DR. A. VANDER VEER, of Albany, presented a report of one hundred and forty-five operations done for removal of ovarian tumors and pathological conditions associated with the ovaries and uterine appendages only. He gave a careful review of the subject of the preparation of patient, embodying all the strong points pertaining to the technique of such work, placing great stress upon the importance of the room in which the operation was to be done being put in a thoroughly aseptic condition, and thorough cleanliness of the patient herself. The operations comprise all the varieties of pathological conditions met with in connection with the ovaries and tubes. The histories of the cases were somewhat interesting. Thirty-nine gave a history of phthisis, fifteen of carcinoma, fifty-seven of irregularity of menstruation. The mortality amounted to 11 per cent. While not criticising adversely the methods of other operators in closing the wound by means of different rows of sutures, kangaroo tendon, and other forms of sutures, yet he has no reason to give up his usual method of closing the wound by deep sutures of silkworm-gut, placing them three or four to the inch, taking in carefully only a margin of the skin, a portion of the fascia and muscles, and not to exceed one-quarter of an inch in width of the peritoneum itself, placing much stress upon the importance of careful, thorough, complete apposition. The causes of death in the seventeen cases were as follows: Obstruction of the bowels due to a coil of small intestines becoming attached to the stump of the pedicle, causing death on the fourth and fifth day, two cases. Septic peritonitis, two cases. Immediate hemorrhage from the pedicle, slipping of the knot within six hours after the operation, though the wound was reopened, the vessels secured, abdomen flushed, and hemorrhage controlled, one case. Undoubted hemorrhage from the pedicle, causing general peritonitis, although no distention of the bowels was present, death on fourteenth day, one case. Shock within twelve hours after operation, one case. Shock within twenty-hours after operation, one case. Autopsy in both cases revealed everything in good condition. Pulmonary infarction on sixth day, one case. Aggravated diabetes, one case. Exhaustion on the sixth day, no other apparent cause found, one case. Another case of exhaustion on the third day, the symptoms in the last two cases, including an autopsy, not revealing any other cause. Multilocular ovarian cyst, tapped twice, operation complicated with four months' pregnancy, one case. Puerperal septicemia, one case. Intestinal obstruction on twenty-first day, one case. Advanced age, complicated with the recent effect of an attack of la grippe, one case. Delayed operation in a case of extra-uterine pregnancy possibly four months, one case.

DR. A. H. CORDIER, of Kansas City, read a paper on "Hydrosalpinx." He said that articles had appeared in medical journals by the so-called conservative writers in the last few months in which aspiration or catheterization of the Fallopian tubes filled with liquid had been advocated as a procedure of relief and cure. Such articles had engendered a retrograde tendency on the part of many, and it is sure to be at the expense of an increased mortality from subsequent operative procedures to cure these cases after abandoning the unsurgical and uncertain tinkering. Hydrosalpinx had been looked upon as the least hazardous of all inflammatory results to the Fallopian tubes. The writer claimed that hydrosalpinx was a sequel of some old inflammatory diseases of the

tubes, an offspring of a virulent process that had wrought permanent and irreparable injury to the delicate structures of the tubes. The writer did not consider hydrosalpinx as a retention-cyst. Cases were rarely diagnosticated prior to operation. A digital examination of one of these cases causes less pain than is produced in examining a case of pyosalpinx. In one case occurring in the essayist's practice the uterine extremity of the tube was largely dilated and filled with a clear fluid, while in the ampulla there existed a collection of pus separated from the clear fluid by a closed stricture.

"Inflammatory Disease of the Uterus and Appendages under Various Modes of Treatment" was the title of a paper by DR. JOSEPH PRICE, of Philadelphia. The methods of treatment of pelvic disease may be broadly classed as those that are proved and those that are experimental. Many of the operations now successful were formerly failures, because of the insufficient knowledge of how to deal with a wounded gut, how to make an anastomosis, or how to do a bowel-resection. Hence, it is to be put down as a postulate in pelvic surgery that no man has a right to attempt it who does not know how to deal with all the complexities of intestinal surgery. To know when to stitch and when not to stitch the intestine is as necessary as to know when and when not to operate. The leaving of pus tubes to recover of themselves is just one step removed from stuffing them with gauze and trusting to Providence. To puncture and evacuate and stitch a suppurating cyst—say a real ovarian cyst—would be derided, and yet, said the essayist, we have operators who do not hesitate to do this with the smaller pus tube.

DR. GEORGE H. ROHÉ, of Catonsville, Md., said that conservative surgeons were very much shocked at first by the proposition to remove the uterus together with the adnexa in cases of inflammatory disease in the pelvis. The operation has, however, won its way against opposition, and must now be considered as an elective procedure in cases of extensive suppuration with adhesion, and especially in those cases, so numerous, in which the endometrium is likewise the seat of purulent inflammation. Gonorrheal, puerperal, or tubercular inflammations and dense adhesions with displacement of the uterus demand removal of this organ, as well as of the appendages, if permanent good results are expected. Total extirpation of the uterus and appendages by the vaginal method for pelvic suppuration was first done by Péan, in 1886. Péan, Segond, Doyen, Jacobs, and Landau have performed the operation upward of five hundred times, with an average mortality of less than 5 per cent. The operation by the vagina is easier than abdominal extirpation, and, in the hands of most surgeons who have performed it, is attended by less shock. It leaves the parts in condition for perfect drainage. The after-treatment is simple. Patients may sit up in a week or ten days. Forceps are preferred to the ligature for hemostasis.

The next paper was on "The Present Status of the Treatment of Pelvic Inflammation, or How Shall We Deal with Pelvic Inflammatory Troubles? By DR. W. B. DORSETT, of St. Louis, Mo.

The author drew the following deductions:

1. Pus in quantities is hard to deal with down in the pelvis in laparotomy cases, and, if possible, should be evacuated prior to taking out the tubes and ovaries, either through the cul-de-sac of Douglas, or, if between the layers of the broad ligament at the side of the uterus, laparotomy should be done at some future time.

2. Pus-sacs in the tube near the uterine end of the tube can be evacuated through the uterus by packing the horn.

3. Parametritis or cellulitis of the ancients is, except under rare instances, a secondary trouble due to a foul uterine cavity. Clean out the cavity and stop the source of poison, and you do the best thing possible to be done.

(To be concluded.)

AMERICAN PUBLIC HEALTH ASSOCIATION.

Abstract of the Proceedings of the Twenty-second Annual Meeting, held in Montreal, P.Q., September 25, 26, 27, and 28, 1894.

FIRST DAY—MORNING SESSION.

THE Association convened in the Hall of the Y. M. C. A., and was called to order at 10 A. M. by the President, Dr. E. P. LACHAPELLE, of Montreal.

DR. ROBERT CRAIK, of Montreal, reported on behalf of the Local Committee of Arrangements.

DR. H. F. NUTTALL, of Baltimore, contributed a paper entitled "Hygienic Notes Made on a Short Journey Through Italy in 1894," which was read by Dr. A. L. Gihon, of Washington, D. C. The notes referred principally to the sanitary condition of Naples, where poverty and ignorance provided an easy prey to every epidemic until 1884. But after the cholera epidemic of 1884 the government resolved to spend one million francs for sanitation. New sources of water-supply were secured, new sewers built, and whole blocks of tenements were torn down and replaced by modern houses. The result has been to impart habits of cleanliness to the people and to greatly reduce the death rate.

"The Cart Before the Horse," was the title of the next paper, by DR. BENJAMIN LEE, of Philadelphia. The object of the paper may be briefly embodied in the two following propositions:

1. Copious water supplies with the aid of what is known as modern plumbing, constitute a means of distributing fecal pollution over immense areas, through the soil, through subterranean water-courses, and in surface streams, and cannot, therefore be regarded with unmixed approbation by the sanitarian.

2. The question of drainage and sewerage, whether for individual residences or for communities should always precede that of water-supply; and no water-closet should ever be allowed to be constructed until provision has been made for the disposition of its effluent in such a manner that it shall not constitute a nuisance prejudicial to the public health.

DR. WYATT JOHNSTON, of Montreal, followed with a paper on "Observations upon Sedimentation in Water," in which he said that the amount of settling which takes place in the settling basin of the Montreal Water Works is too small to be seriously considered, the capacity of the basin being only twenty-three million gallons, and the daily consumption about eighteen million, the water really only passes in and out of the basin. Analysis proves that bacteria are far less numerous in the reser-

voir water than in the settling basin. The melting of snow in the spring has a tendency to increase the number of bacteria in the reservoir water. As to the value of sedimentation from a hygienic point of view, it is much below that of a sand filter.

Dr. A. N. BELL, of Brooklyn, described very completely the Long Island Water Basin, or Brooklyn's Reservoir.

PROF. F. T. SHUTT, of Ottawa, Canada, read a paper entitled "Water of Our Farm Homesteads." The speaker had examined hundreds of samples of water from wells from Canadian farms, and very frequently had found it polluted. No doubt many cases of disease could be traced to this source. Water containing the drainage of barnyards could not but be a source of danger and the cause of internal disorders. Too much care cannot be taken in selecting the site of the farm-well and in keeping the surroundings free from filth.

"Sand Filtration of Water, with Especial Reference to Recent Results Obtained at Lawrence, Mass," was the next paper, by Mr. GEO. W. FULLER, of Lawrence. The author entered a strong plea in favor of sand filtration of water. During the five years preceding the use of the filter at Lawrence the average annual death-rate from typhoid fever was 1.27 per 1000 inhabitants, the population of Lawrence being 50,000, and this average is equivalent to 63 actual deaths per annum. During the past year there have been 26 deaths from typhoid fever, a reduction of 60 per cent. Of the 26 who died, 12 were operatives in the mills, each of whom was known to have drunk unfiltered and polluted canal water, which is used in the factories at the sinks for washing.

MR. E. B. SHUTTLEWORTH, of Toronto, contributed a paper entitled "Some Deductions from Bacteriological Work on the Water of Lake Ontario," dealing with the bacteriological character of lake water. With regard to the depth of water as affecting the number of bacteria, the author is inclined to think that bacteria are directly influenced by season. He is convinced that certain microörganisms multiply most readily at certain seasons of the year. He threw out the suggestion that this may have an important bearing in explaining the prevalence of typhoid fever at certain times during the year. This seasonal peculiarity was marked in Toronto, where every September shows a sudden increase in the typhoid rate, with a corresponding decrease after October.

FIRST DAY—AFTERNOON SESSION.

On reassembling the first paper read was by DR. CHARLES SMART, of Washington, it being the "Report of the Committee on the Pollution of Water-Supplies," of which Dr. Smart is chairman.

The report reviewed at length the influence which a polluted water-supply may have had in the recent cholera epidemic in Europe, and upon the spread of typhoid fever on both continents. The efforts to purify water by sand-filtration were also reviewed, the committee hesitating to reaffirm its former positive language with regard to the sufficiency of filtration as protection against typhoid fever; nor, on the other hand, does the committee regard the testimony as authorizing a formal declaration of opinion in favor of the efficiency of filtration. It is hoped that the success achieved at Lawrence will lead to the filtration of other surface waters, each of which will probably teach an important lesson in connection with bacteriologic experiments and with the mortality from typhoid fever before and after the construction of the filter-beds.

DR. GARDNER, of London, Ont., moved that, in view of the danger to the public health by the sewage contamination of our fresh water lakes, rivers, and streams, this Association memorialize the different Federal Governments, as well as the State and Provincial Governments, to pass laws prohibiting the contamination of water-supplies by sewage from cities, towns, and villages, and compel them to provide some means for the treatment and oxidization of this sewage before emptying it into these places. Carried.

DR. CHARLES A. HODGETTS, of Toronto, read a paper on the "Management of Diphtheria Epidemics in Rural Districts." The medical officer in these cases must exercise a personal supervision, not only over his patients, but personally superintend the carrying out of all orders, for upon the thoroughness of the work depends to a very large extent the prevention of further outbreaks in the district. The inhabitants of the rural districts should receive more attention from the sanitary authorities than they have in the past, and some inexpensive system should be adopted for the more efficient and prompt management of epidemics in those portions of our country. The schools should be closed in the district until such time as the inspector has satisfied himself in the manner indicated that the households of the individual scholars thereof are free from diphtheria.

DR. P. H. BRYCE, of Toronto, followed with a paper on "Practical Difficulties by Medical Health Officers and Physicians in Dealing with Inspected Cases of Diphtheria." One of the difficulties consisted in differentiating between simple sore-throat and diphtheria, but in order to be on the safe side the author recommends and urges isolation of all cases.

DR. J. ED. LABERGE, of Montreal, read a paper on "Vaccination as a Preventive of Contagious Diseases," in which he dwelt largely upon the investigations of Pasteur and others.

DR. J. D. GRIFFITH, of Kansas City, contributed a paper entitled "Innocuous Transportation of the Dead." He opened by quoting instances in which epidemics were renewed by the exhumation of bodies after years had elapsed, and concluded that the danger of one having died from an infectious disease must be great. He cited as an instance of the virulence of a dead body that in a Normandy village twenty-three years after an epidemic of diphtheria some of the bodies of those who had died of the disease were exhumed, and an epidemic at once broke out, first among those who had opened the grave, and spread from those to many others. Other examples were cited. Until we educate the public to the point of thorough sanitation of cremation the transportation of dead bodies by the railways is and always will be a source of very great danger. He urged that attention be directed by the Association to the different legislative bodies of the land to a subject of such vital importance. He urged, furthermore, that all railways set off a small portion of their baggage cars for the transportation of dead bodies, placing the body in a box lined with zinc with a door very much after the fashion

of a large ice-chest. This done, the lives of employés would not be endangered. No broken or open box could become infected, and no odor would escape from the car.

FIRST DAY—EVENING SESSION.

At this session addresses of welcome were delivered by Dr. Robert Craik, of Toronto, His Honor the Lieutenant-Governor of Quebec, Mayor Villeneuve, of Montreal, and Hon. L. P. Pelletier, of Montreal. The President's Address followed, in which he reviewed the progress of the Association during the twenty-two years of its existence.

(To be concluded.)

CORRESPONDENCE.

VITAL STATISTICS OF THE NEGRO.

To the Editor of THE MEDICAL NEWS,

SIR: Mr. Frederick L. Hoffman, in an article in THE MEDICAL NEWS (September 22, 1894, page 320) entitled "Vital Statistics of the Negro," refers to a communication made by me on the same subject, April 7, 1894, page 389, in which a plea is made for the consideration of sociologic factors in the study of this question.

The whole subject of statistics is involved, and the negro is merely used as an illustration. Figures in themselves mean nothing; they must be carefully analyzed and studied in connection with social conditions. To say that one city has a larger death-rate than another may be a statistical truth, but it is not a truth from which alone we can draw conclusions. We must know what influences exert themselves in each city; what is the occupation and the nationality of its population; the percentage of children to adults; the geographic position of the city; whether its inhabitants live in tenements or separate dwellings; whether they are in affluence or in poverty; whether ignorant of hygienic laws or cultivated in them; and a host of other matters must be taken into consideration before we can say that one city is *healthier* than another. There are three kinds of lies, some one has said, "white lies, black lies, and statistics."

Mr. Hoffman, from the strength of facts presented, concludes that "the differences are physical and permanent," and yet a few lines before he says that "under better social and sanitary conditions the death-rate (among the negroes) will diminish, but it will still be in excess of the neighboring whites." Certainly, because the neighboring whites in the better districts are usually the wealthy classes who employ these very blacks, who live in the alleys back of their mansions.

And again, he says, "what else but a high rate of mortality and a low degree of morality can be the result of such tendencies," namely, the crowding together in the worst districts of the large cities. But if the "differences are physical and permanent," of what use "the genuine education in laws of hygiene and principles of morality" which Mr. Hoffman recommends? If an all-wise Providence has ordained the black man to be the servant of the white man, and to be unable ever to cope with him in the social struggle, why try to oppose the "hidden wisdom?"

Mr. Hoffman raises the question that "if the high rate of mortality among the colored population be due largely to unfortunate social conditions, why should not also the foreign element be affected in a similar manner?" And he partly answers this question by stating that the Irish population shows a mortality similar to the negro, and in my communication I stated that the Italians gave as large a death-rate in the slums as the negroes.

I will here quote from the compendium of the Eleventh Census, Part II, in which returns are given from registration bureaus covering a population of about 13,400,000 persons. Of this number, 7,200,000 live in cities and the balance in country or rural districts. Arranged according to nativity and color are:

Colored	1,000,000
Native-born whites	6,000,000
Native born of foreign parentage	3,250,000
Foreign born	3,000,000

A sufficiently large number from which to draw conclusions.

	Per 1000.
The death-rate on the total number was	19.64
" " " city population was	23.58
" " " rural population was	14.99
" " among the colored was	19.57
" " " foreign born was	19.85
" " " native whites was	17.00
" " " native born of foreign parentage was	24.32
Colored death-rate in cities was	34.52
" " in rural districts was	19.00
White " in cities was	23.32
" " in rural districts was	16.00

This shows that the foreign-born whites and the children born of foreigners have the same death-rate as the colored, because they often dwell in the same surroundings and are under the same economic conditions.

This summer I had opportunity of studying the mortality of some of the so-called "slum" districts of our city. A tenement-house owned by a philanthropist and conducted on sanitary principles, occupied by 25 colored adults and 25 colored children, gave an annual mortality for the past three years of 10 per 1000 (2 deaths in four years), while in the rear of this tenement a court, in which several colored and white families resided, returned a mortality of 40 per 1000. Two squares away—in Baker Street—(the rag-pickers' district) occupied almost exclusively by Italians, and where the children are less numerous in proportion to the adults than among the Russians and negroes, the mortality rate was 45 per 1000.

Now, to show how little statistics in themselves are worth, we find the Russian Jews living in the same house with Italians and colored returning a much smaller percentage of deaths than either, and yet much larger than is obtained from the farm colonies of New Jersey, where the same class of individuals are settled, because the Jew, no matter how filthy he may appear, has some knowledge of hygienic laws and takes care of his children; the more ignorant he is, the more orthodox in his observances of these Mosaic laws.

Thus, social conditions and hygienic surroundings largely influence the death-rate, and the negro usually lives in the most unsanitary and wretched portions of the large cities.

We ought not to classify the mulatto with the full-

blooded negro any more than with the pure white. They should be considered in a class by themselves, and yet all the deaths occurring among this mixed breed are credited to the negro. The death-rate among mulattoes is, I believe, much in excess of that of the pure negro, and this may be due to the illegitimacy of birth, which plays some rôle here. Leffingwell, in his study on "Illegitimacy," states that among the illegitimate children of Great Britain and other countries the death-rate is twice as great as among the legitimate. This fact may also have some bearing on the death-rate among the colored generally, as illegitimacy is quite common among them. Children without a father are more apt to be neglected, the mother, obliged to make her living, leaving the child to care for itself.

Mr. Hoffman brings forward statistics from the army and insurance actuary, and he could use the figures presented in my communication in relation to deaths in prisons. We do not dispute the fact that the *adult negro* furnishes a greater mortality than the *adult* white under similar conditions; but, as the majority of these deaths are due to tuberculosis, and as this disease can be acquired in infancy and remain latent for a long period, and that nowhere can we find better conditions for the spread of this infectious disease than in the miserable and overcrowded dwellings of the great majority of negroes, a reasonable claim might be made for the statement that because of this *previous environment* the colored adult is not the equal of his white brother, and must react differently to the same stimulus, and not because "of a race proclivity to disease and death."

The moral question must be treated in the same special manner. All law-breakers are not sent to prison, and the more influential the criminal, the less likelihood of conviction. The police-court investigation in New York City shows us that morals cannot be determined by the number of arrests, and that the most disorderly element in New York City was most exempt from police interference.

We should compare this mass of poverty and ignorance with that mass of poverty and ignorance; but we cannot take a class as socially distinct as the negro and stand him up against the whole white race with its four or five social divisions; it is not scientific. As stated before, this is not a race question; it is simply a plea for the sociologic analysis of statistics.

In the same number of the Medical News (p. 316) Dr. Irving M. Snow has a paper on "Rickets among Italian Children," and in it he shows how, under bad surroundings in this country, the children of Neapolitan parents are more likely to be afflicted with rachitis than in their native clime, "because in their own land the misery, ignorance, and neglect of hygiene amid which the children are reared are in some degree offset by the bright, warm sunshine," and in which they constantly live. He further states: "This cannot be accomplished with the children of the city poor, and it is to *this lack of pure air* and *sunlight* that we may attribute the spread of rickets in densely populated urban communities." . . . All the causes of rickets—improper food, bad air, depression caused by infantile maladies—are intensified, and the presence of rachitis in seven-tenths of the Neapolitan babies in Buffalo indicates a constitutional deterioration from a great and sudden change in environment."

The very same causes are active in the negro, and rickets is likewise a common disease among the colored children.

Thus, before we can call characteristics racial and dependent upon distinct organic differences, we must eliminate the sociologic factor, and to understand this requires a thorough knowledge of the environment and how it influences the element of society in question; and most important, from a physical as well as moral point of view, is the environment of infancy and childhood. Improper nourishment, neglect, exposure to disease, all leave lasting effects on impressionable material, causing deep physical changes, as might be illustrated by many well-known examples.

Respectfully yours, M. V. Ball.

Philadelphia, Pa.

NEWS ITEMS.

The New York State Medical Association.—The eleventh meeting of the New York State Medical Association will be held Tuesday, Wednesday, and Thursday, October 9, 10, and 11, 1894, at the Mott Memorial Hall, 64 Madison avenue, near Twenty-seventh street, New York City. The following papers have been announced: (1) A Case of Lateral Lithotomy for the Removal of a Wire-nail, Alleged to Have Been in the Bladder for Years; Recovery; (2) Report of a Case of Traumatic Epilepsy; Recovery, Zera J. Lusk, M.D., Wyoming Co.; (3) A Case of Anesthesia with Death, and Attempted Extortion Successfully Resisted; (4) A New Non-conducting Speculum for Post-partum and Post-abortum Intra-uterine Douching, Eden V. Delphey, M.D., New York Co.; (5) Interesting Cases from General Practice, Illustrating Special Points of Treatment, Charles E. Lockwood, M.D., New York Co.; (6) Brief Comments on the Materia Medica, Pharmacy, and Therapeutics of the year ending October 1, 1894, E. H. Squibb, M.D., Kings Co.; (7) Some Interesting Cases of Appendicitis, Joseph D. Bryant, M.D., New York Co.; (8) Typhlenteritis Versus Appendicitis, J. W. S. Gouley, M.D., New York Co.; (9) The Differential Diagnosis of Intra-cranial Lesions, Charles Phelps, M.D., New York Co.; (10) Recent Studies on Diphtheria and Pseudo-diphtheria, William H. Park, M.D., New York Co.; (11) Diphtheria, John Cronyn, M.D., Erie Co.; (12) The International Sanitary Conference of Paris in 1894, Stephen Smith, M.D., New York Co.; (13) Can Herpes Cause Dangerous Edema or Spasm of the Glottis? John S. Jamison, M.D., Steuben Co.; (14) The Technique of Cesarean Section, with Exhibition of Cases, A. Palmer Dudley, M.D., New York Co.; (15) Hysterectomy for Uterine Fibroma by Baer's Method, with Report of Nine Successful Cases, Joseph Taber Johnson, M.D., Washington, D.C.; (16) Hysterectomy in Pus Cases, William R. Pryor, M.D., New York Co.; (17) The Anatomy and Surgical Treatment of Inguinal Hernia in the Male, Illustrated by the Stereopticon, Henry O. Marcy, M. D., Boston, Mass.; (18) Fractures at the Elbow-joint, E. M. Moore, M.D., Monroe Co.; (19) Fractures of the Inferior Extremity of the Humerus, Involving the Articulating Surface; with Report of two Cases Occurring in Chil-

dren, Douglas Ayres, M.D., Montgomery Co.; (20) The Stearate of Zinc Compounds in Atrophic Rhinitis, Joseph S. Gibb, M.D., Philadelphia, Pa.; (21) Suppurative Cellulitis Following an Injury to the Hand, William H. Robb, M.D., Montgomery Co.; (22) Diet and Regimen for the Diminution of Fat, T. J. McGillicudy, M.D., New York Co.; (23) Discussion on the Prevention of Tuberculosis, Hermann M. Biggs, M.D., New York Co.; (1. The Importance of Tuberculosis from a Sanitary Standpoint, as shown by its Prevalence. 2. The Factors in the Causation of Tuberculosis. 3. The Communicability of Tuberculosis and the Manner of its Transmission. 4. The Early Recognition of Pulmonary Tuberculosis through Bacteriological Examination and its Influence on Prevention. 5. The Influence and Value of Special Hospitals for the Treatment of Tuberculosis in the Prevention of the Disease. 6. The Influence of the Doctrine of Communicability upon the Diminished Prevalence of Tuberculosis. 7. The Importance of Measures to be taken at Health Resorts for Tubercular Patients for the Prevention of this Disease. 8. The Dangers of Infection in the Various Means of Transportation, *i. e.*, Steamboats, Surface and Elevated Cars, Day-coaches and Sleeping-cars. 9. The Proper Attitude of State, Municipal, and Sanitary Authorities Toward Tuberculosis, and the Specific Measures to be Taken for the Prevention of this Disease.) These propositions will be discusses by: (24) Lawrence Flick, M.D., Philadelphia, Pa.; (25) W. T. Councilman, M.D., Baltimore, Md.; (26) Edward G. Janeway, M.D., New York Co.; (27) E. K. Dunham, M.D., New York Co.; (28) William H. Park, M.D., New York Co.; (29) Henry D. Didama, M.D., Onondaga Co.; (30) The Diagnosis and Treatment of Pleurisy, J. Blake White, M.D., New York Co.; (31) The Treatment of Retinitis Albuminuria from an Ethical Standpoint, Frank Van Vleet, M.D., New York Co.; (32) Address: The Germs of Some Discoveries, John Shrady, M.D., New York Co.; (33) ℞: A Few Therapeutic Hints, Henry D. Didama, M.D., Onondaga Co.; (34) The Removal by Trephining of Fluid the Result of Acute Cerebral Meningitis, with Report of a Case, and Experiments Upon the Lower Animals, B. M. Ricketts, M.D., Cincinnati, Ohio; (35) Reminiscences of a Country Doctor During the Past Fifty Years, Including the Crude Condition of American Medical Literature at the Beginning of that Period, Darwin Colvin, M. D., Wayne Co.; (36) A Practical Study of Grave Abdominal Contusions, with a Clinical Report of Twenty Other Cases, Thomas H. Manley, M.D., New York Co.; (37) Some Facts About the Treatment of Typhoid Fever, John G. Truax, M.D., New York Co.; (38) Intestinal Anastomosis, Frederick H. Wiggin, M.D., New York Co.; (39) The Arthropathies of Locomotor Ataxia, Parker Syms, M.D., New York Co.; (40) A Case of Ectopic Pregnancy at the Utero-tubal Junction, E. D. Ferguson, M.D., of Rensselaer Co.; (41) Primary Laparotomy in Tubal Pregnancy, J. E. Janvrin, M.D., New York Co.; (42) Direct Arterial Transfusion, John G. Orton, M.D., Broome Co.; (43) Restoration of Function of the Lung and Pleura after Thoracentesis, Charles A. Leale, M.D., New York Co.; (44) Uretero-intestinal Fistula as a Result of Abdominal Abscess Not Due to Appendicitis, A. J. Van Vraken, M.D., Albany Co.: (45) Remarks on Strangulated Inguinal Hernia, Robert Selden, M.D., Greene Co.; (46) What is Fever and How is it Best Managed? Henry F. W. Risch, M.D., Kings Co.; (47) Tetanus; its Etiology, Pathology, and Treatment, J. Lewis Smith, M.D., New York Co.; (48) Cases of Death of Fetus at an Early Stage of Gestation, and Retained in Uterus to full Period, H. O. Jewett, M. D., Cortland Co.; (45) Title to be announced, C. G. Stockton, M.D., Erie Co.

The Medical Society of Virginia will hold its twenty-fifth annual session at Richmond, October 23, 1894. In addition to the annual address of the President, Dr. William P. McGuire, of Winchester, the subject of "Appendicitis" will be discussed by Dr. William L. Robinson, of Danville. Dr. J. W. Long, of Richmond, will follow with a paper on "The Indications for Celiotomy in Appendicitis." Dr. Edwin A. Down, of Hartford, Conn., will read a paper on "The Psychic Factor in Appendicitis." Drs. A. M. Phelps and Robert T. Morris, of New York City, and Dr. Joseph Taber Johnson, of Washington, D. C., will discuss the subject.

The following additional papers are announced: "Currettage of the Uterus," by Dr. John W. Dillard, of Lynchburg; "Care of the Insane," by Dr. James D. Moncure, of Williamsburg; "Trephining for Epilesy," by Dr. J. T. Boutelle, of Hampton; "Dysentery," by Dr. William F. Cooper, of Woodville; "Preventive Medicine," by Dr. William A. Thom, Jr., of Norfolk; "Some Old Remidies in the Treatment of Diphtheria," by Dr. George W. LeCato, of Wachapreague; "The General Practitioner's Knowledge and Responsibility in Gynecological Troubles," by Dr. Joseph Price, of Philadelphia; "Preventive Treatment of Pulmonary Phthisis (Tuberculosis)," by Dr. J. Edgar Chancellor, of Charlottesville, Va.; "Sepsis: its Early Diagnosis by the Pulse," by Dr. J. Allison Hodges, of Richmond, Va.; "Sporadic Cretinism and its Treatment by Thyroid Extract," by Dr. Wharton Sinkler, of Philadelphia; "Cesarean Section—Report of a Case," by Dr. Alfred B. Tucker, of New York; "Glycerin Suppository as a Substitute for the Glycerin Tampon," by Dr. J. T. Graham, of Wytheville, Va.; "Psychical Epilepsy," by Dr. Samuel J. Fort, of Ellicott City, Md.; "Report of a Case of Dislocation of the Hip-joint, with Fracture of the Femur," by Dr. George W. Larrick, of Middletown, Va.

Dr. Oertel, Assistant Superintendent of the Hygienic Institute of Hamburg, died on October 2d. His death is said to have been caused by infected water ingested for the sake of experiment and which was followed by an attack of cholera.

BOOKS AND PAMPHLETS RECEIVED.

Thirty-third Annual Report of the Cincinnati Hospital, to the Mayor of Cincinnati, for the Fiscal Year ending December 31, 1893. Cincinnati: The Commercial Gazette Job Print., 1894.

A Case of Primary Tuberculosis of the Laminæ and Spinous Processes of the Vertebral Column. By John B. Roberts, M.D. Reprinted from the Annals of Surgery, 1894.

Tenorrhaphy by Means of the *Suture à Distance* of Catgut with Report of a Case. By Emanuel J. Senn, M.D. Reprinted from the Journal of the American Medical Association, 1894.

Twelfth Annual Report of the Children's Aid Society of Pennsylvania, 1893. Philadelphia: Office of the Society.